THE CONDOR

A Magazine of Western Ornithology

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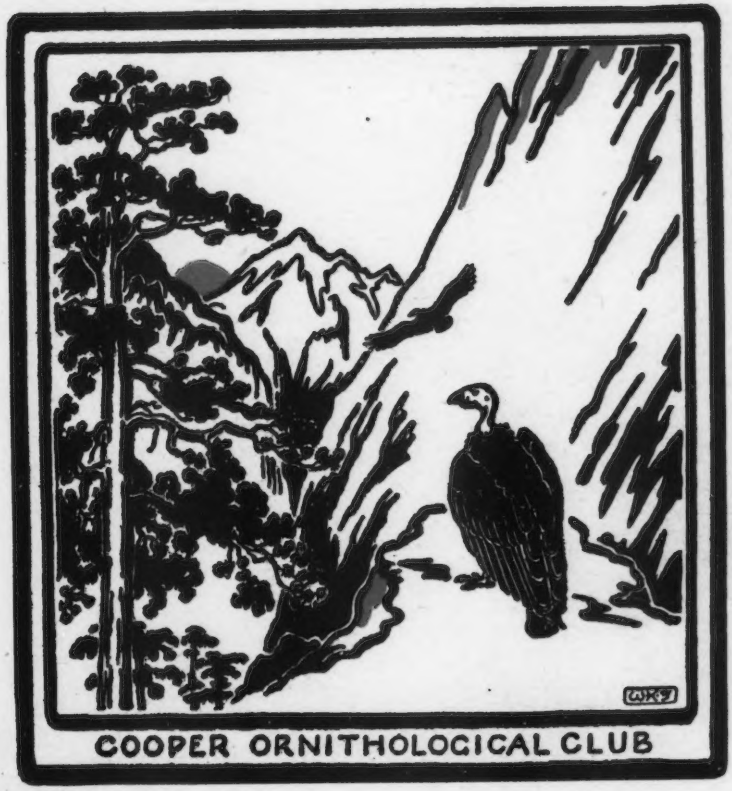

COOPER ORNITHOLOGICAL CLUB

THE CONDOR

A Magazine of Western Ornithology

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Issued September 15, 1931

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VOLUME XXXIII SEPTEMBER-OCTOBER, 1931 NUMBER 5

HUMMINGBIRD BOARDERS

WITH THREE ILLUSTRATIONS

By ROBERT S. WOODS

During that portion of the year when flowers are least plentiful, no birds respond more enthusiastically to proffered hospitality than do the hummingbirds. By providing a suitable food supply, one not only obtains the satisfaction of witnessing their evident enjoyment, but gains as well the opportunity to become better acquainted with hummingbird psychology and to make such experiments as may suggest themselves. In the following account are described some of the reactions of hummingbirds to artificial feeding, as observed by the writer at Azusa, California, since July, 1929.

The first experiment tried was suggested by an assertion in an article appearing in a well-known magazine, to the effect that Ruby-throated Hummingbirds (*Archilochus colubris*) had been attracted by the odor of perfume. This idea seemed quite novel and the evidence cited not particularly convincing, in view of the hummingbird's inquisitiveness in many matters; but a simple test was arranged in order that the local hummingbirds might verify the statement if they were so inclined. Two small vials, to be filled with sugar solution, were fastened to stakes, one of the bottles being wrapped with red cloth, and the other with green cloth upon which were placed several drops of a mild, sweet perfume. The stakes were then set in a flower bed frequented by several immature hummingbirds of various species.

The birds' attention was immediately attracted to the red-covered vial, which they inspected minutely, though only one was observant enough to discover the sugar solution within, since they probed the sides rather than the top of the vial. Finding no nourishment, the others lost interest in it after one or two visits. The perfumed, green-covered vial, on the other hand, was entirely ignored, although the birds often passed close by it. Later, drops of vanilla were placed on the foliage of plants, but this pronounced odor was equally ineffective in attracting the hummingbirds. Neither did a heavily fragrant night-blooming cactus (*Trichocereus*) draw them, while the richly scented jasmine seemed less favored than many other flowers. Thus, although

these tests yielded no positive results, they served to strengthen the writer's previous belief that it would be very difficult to show that hummingbirds were at all guided by any sense of smell.

It may be pertinent to mention at this point that the hummingbird's sense of hearing is well developed, as shown by its definite response to sharp sounds, though its reaction may be merely a nervous start or an attitude of alertness, instead of the immediate flight which is invariably precipitated by any abrupt visible movement. This sudden flight, like the nervous start, can undoubtedly be attributed to reflex action rather than conscious alarm. On the other hand, the slight sound of the crunching of a dead leaf seems to arouse in the hummingbird the same feeling of apprehension which it does in so many other creatures.

Experiments on domesticated birds, such as pigeons and fowls, have been reported as indicating that the spectrum visible to birds extends into the infra-red and stops short of blue and violet. It is evident that the latter part of this conclusion, at least, does not apply to hummingbirds, as they freely visit blue and purple flowers. Bits of red and blue cloth were both found to attract their attention, with no apparent preference shown.

After abandoning the perfume experiment, the hummingbirds were quickly lured to the green-covered vial by inserting a blue agapanthus blossom in its opening. Upon again removing the flower, some of the birds were at first at a loss to know where to obtain the food, but after a time they learned to identify the plain, undecorated vial as a new and exceptionally productive kind of flower.

In drinking, when the syrup is beyond the reach of the bill, it is lapped up by rapid movements of the tongue. The bird is able to reach it in an upright vial at a depth equal to twice the length of the bill. Should the vessel be filled nearly to the top, the liquid is either sipped with the end of the bill submerged or lapped with the tip of the bill held just at the surface and the tongue extended only slightly. The amount of saturated sugar solution normally consumed daily by an Anna Hummingbird (*Calypte anna*) is about two teaspoonfuls, only a few drops being taken at a time.

When the weather is cool, the birds visit the feeding places at short though irregular intervals throughout the day; but in the heat of the summer, half an hour is likely to elapse between mid-day trips, with late afternoon bringing gradually quickening activity. Always, the visits are most frequent and prolonged after the shadows of evening have fallen. Summer or winter, the Anna Hummingbird's day ends at about ten minutes after sunset, as far as feeding is concerned. In the morning the birds are seen drinking earlier than fifteen minutes before sunrise.

In order to determine food preferences, various liquids were offered to one hummingbird which was a regular boarder, a supply of sugar solution being maintained in another vial at the same time as a means of comparison. Juice of preserved strawberries and a solution of quince jelly were definitely rejected, as were milk and watermelon juice. Cane-and-maple syrup was taken readily, but the plain sugar seemed to be preferred. Strained honey was well received, though its viscosity, when undiluted, seemed to occasion some slight inconvenience, for after every few sips the hummingbird would draw away and protrude its tongue rapidly several times. A later trial of the best quality of strained honey did not meet with particular approval, for the birds, after one sample, returned to the sugar syrup.

Changes in the form of the feeding device are often puzzling to the hummingbirds, and necessitate their re-education. When an automatic drinking fountain formed by inverting a bottle into a small cup was substituted for the upright vials,

the hummingbird attempted to thrust its bill through the upturned bottom of the bottle, and even after finally discovering the liquid, was unable on subsequent trips quite to overcome the idea of getting the food through the top of the device.

The hummingbirds' remembrance of these sources of supply is not in any way dependent upon accidentally catching sight of them. A hummingbird, upon visiting a feeding station and finding that the bottle had been removed, flew at once to another which was maintained on the farther side of the house. Their memory for location is surprisingly accurate; when a feeding device has been moved, a hummingbird, upon returning, will often hover at the exact spot from which it has been taken, and will probably make several trips to the place before finally giving it up. On the other hand, a similar device in a new location will attract their attention almost immediately, and they are also quick to visit any additional container which may be placed beside the one they have been using, unless it is of a kind with which they are unfamiliar.

Apparently a hummingbird's discovery of food supplies is aided very little by its observation of its fellows, since a drinking fountain may for some time be patronized

Fig. 35. A HUMMINGBIRD "FILLING STATION". THE CUSTOMER'S NAME IS CALYPTE ANNA. AZUSA, NOVEMBER 20, 1929.

by but one or two of several hummingbirds present. There are indications, however, that the example of one eventually leads to similar action by others.

To the nature of its feeding habits, no doubt, may be attributed the fact that it seems not to occur to the hummingbird to try to reach its food through the use of force, no matter how slight. Should a small leaf or other light covering be placed over the opening of the bottle, the hummingbird will attempt to discover a way around the obstruction, but will make no effort to push it aside. If it finds a crack it inserts its bill with what appears almost like deliberate care to avoid moving the covering.

The artificial feeding sometimes brings out strikingly the differences in individual temperament among the hummingbirds, as in the case of the first two which became regular patrons. One of these, a young male Costa (*Calypte costae*), always

approached the vial confidently and devoted himself wholeheartedly to satisfying his appetite. The other, which looked like a female Black-chinned (*Archilochus alexandri*), was ever on the alert, retreating in alarm and returning to snatch a few more swallows, never seeming entirely at ease even after many visits; its apprehensions were aroused one day by a wad of burlap tied around the middle of the stake to discourage exploratory ants. Most of the others were somewhat intermediate between these two in their characteristics. Nearly all of the birds would leave the drinking fountain as soon as they had satisfied their hunger, but one individual was accustomed to remain at ease on the perch until driven away by another hummingbird.

Fig. 36. A BEE-PROOF DRINKING FOUNTAIN. UNDER ORDINARY CIRCUMSTANCES THE OTHER TYPE IS MORE CONVENIENT. JULY 30, 1930.

The hummingbirds have competitors, of course, who are equally fond of sweets and will in some cases deprive them of the benefits if not guarded against. During the warmer part of the year ants are persistent, and in summer wasps have given trouble when the supply was placed beside a pool where they congregated. The Arizona Hooded Oriole (*Icterus cucullatus nelsoni*) and the Audubon Warbler (*Dendroica a. auduboni*) also are not averse to an occasional drink of sugar syrup. The honey bees, though abundant, showed no interest in the sugar except during a period in the midwinter of 1929-30, when they swarmed around the feeding places in such numbers as seriously to interfere with the hummingbirds' use of them.

Due to their habitual association, perhaps, the hummingbirds accept the presence of the bees more philosophically than that of the ants. Unless the bees are flying, the birds show no particular fear of them, and will thrust their bills through a struggling mass of the insects. A few ants about the mouth of an open vial will often keep the hummingbirds away, though they cause much less concern when swimming in the syrup. A moat filled with water or some repellent liquid is doubtless the most certain means of discouraging these pests.

As it proved impractical to make the corked bottles (figs. 35 and 37) proof against bees, the device shown in figure 36 was arranged with this in mind, the opening being narrow and located so that the liquid would not be drawn by capillarity within their reach. This drinking fountain, when properly protected against ants, seems to give the hummingbirds a virtual monopoly, though it is not unlikely that they themselves prefer the less formidable-looking containers. It consists of a small-mouthed bottle and a glass jar with a metal cover. Two holes are cut through the cover, a round opening on one side just large enough to receive the neck of the bottle, and a slot on the opposite side wide enough comfortably to admit the hummingbird's bill, but too narrow to allow the entrance of a bee or wasp. There is little evaporation and no overflow, as the jar has sufficient reserve capacity to take care of the water forced out of the bottle by the daily expansion of the enclosed air. A supply of undissolved sugar in the bottom of the jar maintains a saturated solution, which is held at a constant level as long as any water remains in the inverted bottle.

The four-ounce brown bottle with a diagonal hole through the cork (fig. 35) is well suited to the hummingbird's convenience, though it may sometimes be subject to leakage or overflow. A narrow air vent along the upper side of the cork helps to overcome the latter trouble as the bottle becomes partially emptied; and permanent sealing of the cork prevents leakage. Superior types of feeding devices could of course easily be designed, but it was the intention to use materials and methods which might come readily to hand.

There has been no indication that the abundant food supply served to delay migration or even, in most instances, to check the nomadic movements of the Anna Hummingbird. During the late summer and fall of 1929, the feeding places were visited by a succession of Anna Hummingbirds, none of which remained long, until a male arrived early in October. This bird's gorget was incomplete at the lower edge until about the middle of November. His "nuptial flight" was first definitely noted on November 20, and it was not until after that time that he took up the characteristic habit of perching on high, exposed places. Previously his favorite resting places had been in the centers of shrubs or small trees.

In January there arrived another male Anna Hummingbird, of slightly larger size and bronzier back—probably the same one which had been regularly passing the late winter and spring months here. The new arrival immediately took charge of the situation, and the visits of the other became gradually fewer and finally ceased.

During the early part of February, this larger hummingbird, now the only one present, patronized the bottles every few minutes during the daylight hours, often braving swarms of struggling bees in order to obtain the syrup; but with the opening of early spring blossoms, both bees and hummingbirds suddenly lost interest in the artificial food, though the bird continued to return during the next two or three days for hasty and dissatisfied sips.

It was not until the following July, with its influx of immature Anna and Black-chinned hummingbirds, that any could be induced again to interest themselves in the bright-colored vials. One of the birds had for several days been drinking from a blue-covered vial, when it was noticed that a young male Anna Hummingbird often perched directly above the vial, but did not visit it. A bottle similar to that in figure 35 was then placed about two feet from the vial, and the bird's attention was quickly attracted to it by inserting a flower in the opening. For several days thereafter the two birds were frequently seen visiting the place, the one drinking only from the vial, the other only from the corked bottle.

After a time the bottle was replaced by the drinking fountain of figure 36. Since it would be too much to expect a hummingbird to solve this new problem without assistance, steps were taken to introduce it to him by degrees. First, the inverted bottle was removed, the jar turned around with the larger hole next to the perch, and a flower placed in the opening. When the habit had been formed by a few visits, the flower was removed. The next day the jar was turned around again, and the larger opening covered up. Finally, the bottle was replaced, thus completing the automatic feeding device—and all without interruption to service.

Fig. 37. THIS ANNA HUMMINGBIRD APPLIED HIMSELF SO DILIGENTLY TO THE BUSINESS IN HAND THAT IT WAS DIFFICULT TO PHOTOGRAPH HIM IN ANY OTHER ATTITUDE. FEBRUARY 22, 1931.

The color of this presumably immature Anna Hummingbird's head and throat, at first sooty black with glints of red, slowly became redder, and finally the feathers of the throat lengthened until, about the first of October, the ruff appeared to have been completed, though the gorget still seemed to be lacking somewhat in brilliancy and perfection of outline.

This hummingbird was in full "song" from the time of its arrival early in July. As far as noted, its initial "nuptial flight" occurred on September 12. On this first occasion the chirp uttered at the lowest point of the flight was not typical either in strength or quality—plainly a beginner's attempt.

About the middle of October it was noticed that the bird—almost certainly the same individual, as it had been present continuously, and no more than one male was observed during this time—had been molting the feathers of its crown and gorget; the ruff had been lost and the throat and head were decidedly ragged-looking, the former being streaked with gray. The balance of the plumage showed no signs of molting. The new and brilliant gorget was practically complete by the first of November, a week or two earlier, perhaps, than in the case of the previous

year's individual. The "nuptial flight" was not observed during the molting period, but was resumed not later than the middle of November.

In 1931, contrary to the experience of the year before, the abundant blooming of spring flowers brought no abatement in the consumption of syrup by the two Anna Hummingbirds, male and female, which had been regular boarders for more than six months. The only obvious explanation for this difference would be the greater care used in maintaining the freshness of the solution and the more shaded location of the drinking fountain.

Though the nest of this female hummingbird was not found, her attendance at the feeding station seemed to indicate rather clearly the nature of her activities. During the last few days of January and the early part of February she was seldom seen; after that the redoubled frequency of her visits suggested that there must be other mouths to feed. Since no young birds were seen at this time, it is not unlikely that the brood met with some mishap. Two months later the same cycle was repeated, but as before, the result was undetermined.

While the birds which consumed sugar syrup did not entirely neglect the flowers, plainly no large part of their sustenance could have been derived therefrom. A nearby row of coral-bells (*Heuchera sanguinea*), a particularly favored hummingbird flower, was often visited by other hummingbirds, but seldom by those frequenting the drinking fountain. The insect food needed to furnish the protein portion of their diet must be obtained through their gnat-catching activities.

That a considerable amount of mineral matter is required, at least by the females in spring, may be inferred from certain of their actions, in which they appear to be picking up particles of sand or mortar. Sometimes, too, the female Anna Hummingbird would hover close to the ground and thrust her bill repeatedly into the loose soil.

Since Anna Hummingbirds have ordinarily been absent from this particular locality during the early summer, the disappearance of the male about April 20, after nine months' residence, was not unexpected, though it may have been hastened by the recent arrival of a larger male of the same species, or possibly by the persecutions of the female, whose former meekness had been replaced, about the beginning of the nesting season, by a decidedly tyrannical attitude toward her mate. At the time of writing, this female hummingbird is enjoying the sole use of the sugar syrup, for none of the numerous spring visitants profited by her example, or was lured by the occasional offer of a flower-decorated vial.

In conclusion, it is evident that under conditions which prevail in much of California, the Anna Hummingbird will be the chief beneficiary of any feeding system; also, that the most favorable time for introducing such a program will be in midsummer, when flowers have become less plentiful and when there are numbers of immature hummingbirds whose inexperience and curiosity lead them to investigate any unfamiliar, brightly-colored object.

Azusa, California, May 13, 1931.

HISTORY OF A NESTING COLONY OF CASPIAN TERNS ON SAN FRANCISCO BAY

WITH THREE ILLUSTRATIONS

By DUDLEY S. DEGROOT

It was in 1924 that information was first brought to Mr. Chase Littlejohn, veteran naturalist of Redwood City, that a colony of Caspian Terns (*Hydroprogne caspia imperator*) was breeding somewhere in the southern reaches of San Francisco Bay. The man who brought Mr. Littlejohn the information stated that a few of the birds had been noted in 1922 and again in 1923, but it was not until 1924 that they became numerous. He was asked to bring in a few of the eggs the next time he came to town, which he did the following week. These eggs, together with a vivid description of the birds, convinced Mr. Littlejohn and myself that Caspian Terns were breeding in the Bay district. It was not until July 4, 1926, however, that we were able to affirm positively our earlier convictions, by making a trip to the nesting colony.

Leaving Redwood City by automobile about five-thirty on the morning of the fourth it did not take us long to reach a group of salt ponds on the southeastern side of the Bay, where the colony had previously been located. These ponds were enclosed and subdivided by a series of dikes or levees and it was upon one of the latter that the birds had been reported nesting. The question was, which one of the many miles of dikes had the birds selected: not an easy problem, as the dikes all looked exactly alike. With the aid of a field glass we eventually picked up a rather steady flight of birds all of which seemed to be headed toward a single point on one of the dikes, some half-mile distant. Upon closer scrutiny of this particular area we were quite sure that we could see a closely massed colony of nesting birds.

Eagerly anticipating the pleasure of stepping into the center of a breeding colony of this species we put on "full steam ahead." As we approached our destination we could clearly see an ever increasing number of terns flying to their breeding grounds. Several of them came quite close to us, making it possible to identify them as Caspian Terns. Each one seemed to be heavily laden with fish, which evidently it was carrying home to a hungry family.

When we were still a hundred yards from the colony all of the adults sailed into the air emitting a rather startling, if not terrifying, chorus of tern blasphemy. The more daring members came right out to meet us, some of them actually swooping down to within a few inches of our heads. Each time one darted at us it let out a raucous war cry which in itself was enough to intimidate a person not acquainted with the antics of nesting birds.

When we reached the colony proper we were greeted by a sight which would delight the heart of any ornithologist. Stretched out over a distance of about a hundred yards, and covering the entire top of the narrow dike, were over a hundred and fifty nests containing young of all sizes, as well as a few late sets of eggs. The dike at this point was approximately twenty-five feet wide, with a flat crown some ten feet in width. The latter was not more than four feet above the water line at any point. More than half of the nests were located on top of this crown. A few were found along the east slope, some two feet above the water line, while still fewer were situated along the windy, west slope not more than a foot above the water level.

The nests in every case consisted of mere depressions in the soft, spongy, marshy soil. No nesting material of any sort was noted. In a good many instances the

eggs seemed to be partially buried. This we attributed to the severe westerly winds which blow in this section of the Bay throughout the year, especially in the spring and early summer.

A good many eggs, well over fifty, were found in the water at the edge of the dike on the east slope. These had evidently been blown out of nests which had not been excavated to a sufficient depth. The force of the wind is often so great in this particular region that there is no question but what the eggs not set down in nests excavated well below the surface level of the dike would stand little chance of being hatched.

At this late date, of course, most of the nests contained young although a number still contained eggs. The young were in all stages of growth. Evidently soon

Fig. 38. THE COLONY OF CASPIAN TERNS ON SAN FRANCISCO BAY. PHOTOGRAPHED BY JOSEPH MAILLIARD IN MAY, 1931.

after hatching they get up and walk about the dike, for in few nests, and these exceptions invariably contained just-hatched young, did we find nestlings of anywhere near equal size. A typical nest would contain one youngster two weeks old, another a week old and a third not more than a few days old. Subsequent examinations of sets of eggs on the point of hatching has shown that all eggs in a single set normally hatch within a few hours, or at the most a day, of each other.

We observed young frequently running from one nest to another, while some of the more daring and older individuals ran and rolled down the banks of the dike to the water where, after a brief swim, they would come back to land and occupy any conveniently located nest. On every visit to the colony a dozen or more dead

nestlings have been noted scattered indiscriminately throughout the colony, which indicates rather clearly that infant mortality in this particular colony is a fairly serious factor. A majority of the dead seem to be several weeks old although newly hatched dead are also quite common. The young are of two distinct color phases: a tan or fawn color and a downy, dull, white. Often a chick of each color will be found in a single nest although, customarily, any one nest contains young of but one color.

Fish of several varieties and many sizes were noticed in nests containing young, indicating that there was an abundance of food for all. A good many fish were found dropped indiscriminately along the top of the dike. We watched with great interest the disgorgement of whole fish, four to eight inches in length, by parent birds, much to the edification of their ravenously hungry offspring.

Of the thirty nests containing eggs twenty-five contained two each, two contained one each and three contained three each. All of these were evidently quite heavily incubated. Two young occupied a majority of the nests in which the eggs

Fig. 39. A TYPICAL NEST AND EGGS OF CASPIAN TERN IN THE COLONY ON SAN FRANCISCO BAY. PHOTOGRAPHED BY EMERSON A. STONER, MAY 14, 1931.

had hatched, although three was not an uncommon number. Four were noted in not less than half a dozen nests while a relatively few contained lone nestlings. The number of young in nests I believe is of rather questionable significance, however, because, as I have indicated above, as soon as the nestlings are able to walk they wander about from nest to nest quite promiscuously.

Summary for 1926. The area occupied by the colony was a space less than 100 yards in length by 25 in width. Total number of occupied nests counted, 164. This did not include many "hollows" which had evidently been used but which at this date contained neither eggs nor young. Total number of young counted, 210. Average estimated age of young, two to three weeks, ranging from many just hatched to others which were undoubtedly a month old. Estimated (from rough count) number of adults seen, 350.

In 1927, Mr. Littlejohn made a trip to the colony on June 6, while I visited it in company with Mr. George Culver of Stanford University on June 11. Much to our satisfaction we found that it had grown and prospered, as the following figures will indicate. Instead of the single solid colony which we had located in 1926, we found that a second and smaller colony had been established some thirty yards south of the original site. Sixty-five occupied nests were counted in this new addition,

twenty-seven of which contained young from a few days to two weeks of age. The remainder of the nests apparently contained eggs well along in incubation. This entire, new addition seemed to be several weeks ahead of the parent colony, from the standpoint of incubation of eggs. Of the nests containing eggs twenty-four had two each, ten one each, and three three each.

The main colony consisted of 138 occupied nests located in an area seventy-five yards in length. Forty-nine nests contained two eggs each, twenty-six three each, twenty-four one each, five four each, and the remaining 34 contained young. A majority of these had just hatched.

The total number of nests for 1927 was therefore 203 or a gain of 39 over the total for 1926. As in 1926, there were many eggs in the water along the edges of the dike and especially along the east side.

Fig. 40. AN UNUSUALLY LARGE SET OF EGGS OF CASPIAN TERN IN COLONY ON SAN FRANCISCO BAY. PHOTOGRAPHED BY G. D. HANNA IN MAY, 1931.

CHRONOLOGICAL ACCOUNT OF THE COLONY INCLUDING RECORDS SINCE 1927

The tern colony was first discovered in 1922 by an unknown workman. Seven nests were located on a dike some two miles from the present location. Some Japanese laborers robbed these first nests and so far as is known no young were raised. In 1923 evidently only two pairs of birds appeared. They nested at the same spot as that occupied the previous year, but the heavy winds of early June dashed water over the top of the dike and washed the eggs away. In 1924 a dozen pairs of birds successfully reared their families on a new nesting spot (the present site), which was more advantageously situated both from the standpoint of winds and of isolation from human interference.

In 1925 the colony undoubtedly increased in numbers although just how much this increase amounted to is not definitely known. Reports which came to us indicated that there were between thirty-five and fifty breeding pairs.

On July 4, 1926, there were 164 occupied nests actually counted by Mr. Littlejohn and the writer, which does not include some fifteen or twenty nesting "hollows"

which had undoubtedly been used. On June 11, 1927, 212 occupied nests were actually counted by George Culver and the writer, with an additional number of "hollows" which either had been used or were to be used soon.

In 1928 the writer was in Santa Barbara but managed to make a hurried trip to the colony on June 14, accompanied by Harry Carriger. On this visit 242 occupied nests were counted, with the usual number of unoccupied nests. In 1929 the colony was not to my knowledge visited.

On June 8, 1930, Mr. Littlejohn and I again visited the colony. Much to our surprise the smaller offspring colony which had made its appearance in 1927 had disappeared and once again there was a single large colony where 296 occupied nests were counted along with the usual number of unoccupied ones.

In 1931 Mr. Littlejohn and I visited the colony, in company with my wife, on June 3, when 287 occupied nests were counted with an additional 30 or 35 unoccupied ones. Approximately 75 loose eggs were noted along the eastern water line. I again visited the colony on June 23 for the purpose of taking moving pictures of the young and adults. Only 135 occupied nests were counted on this trip, although there were countless numbers of young running and hiding about the dike, as well as swimming around in the water. There were about twenty nests containing eggs which, judging from their color and cleanness, had recently been laid.

Mr. Emerson A. Stoner and Harry Carriger made a trip to the colony on May 14, 1931, at which time they counted 167 occupied nests and many others yet unoccupied. Those which were occupied contained from one to four eggs each, no young being noted.

During the latter part of May, 1931, Mr. Joseph Mailliard, accompanied by Dr. G. Dallas Hanna, was escorted to the colony by one of the workmen who is employed by the salt company and who lives less than two miles from the colony. Driving up to the colony in an automobile, which is an experience the writer has not had, they were able to approach to within fifty feet of the nesting colony without seriously disturbing the birds. From this vantage point, and using the car as a blind, they secured some excellent pictures of the colony (for example, fig. 38). On this visit 228 occupied nests were counted, the greatest number of them containing two or three eggs each.

As the nesting colony of Caspian Terns here described is located on private property it is reasonable to suppose, barring of course some major catastrophe, that it will continue to increase in numbers through the years to come. Evidently the food supply is ample; protection from animal enemies is reasonably good, and there seems to be no serious menace from man to the future welfare of the colony. Nesting apparently commences early in May and continues on through June and up until the middle of July. The height of the breeding season is reached, I should say, during the first or second week in June. Just when the birds make their first appearance in their nesting region, when they leave for their winter quarters, and where they winter are facts which have not yet been determined but which we hope to clear up in the future. The colony offers an unusual opportunity to carry on an excellent piece of work in bird-banding, of which we hope to take advantage this summer.

In closing I should like to add a word of thanks to Mr. Joseph Mailliard, Dr. G. D. Hanna and Mr. Emerson Stoner for forwarding me their photographs of the colony. And to Chase Littlejohn, of course, must go all credit for the discovery of this colony.

Menlo Junior College, Menlo Park, California, July 1, 1931.

STUDIES OF FOOD AND GROWTH OF THE PRAIRIE FALCON

WITH SEVEN ILLUSTRATIONS

By F. H. FOWLER

In the spring of 1928 the bird lover who has the regular annual job of "loving" the Prairie Falcons in one of the cañons of the San Joaquin side of the Mount Hamilton range was either seriously sick, or in foreign parts, or forcibly confined by the police—therefore unable to perform his regular duties. The details do not greatly matter; the main thing is that two pairs of falcons hatched their eggs. The unique opportunity thus afforded to observe the young at progressive stages of their development was obviously not to be neglected.

Nest number 1 was in the upper foothills, at an altitude of about 1700 feet. The eggs were laid on the loose rock chips and sand of a small shelf overhung by the upper part of a sandstone cliff. The distance from the top down to the shelf was about ten feet, and from the shelf to the base of the cliff about forty-five feet more. From the bottom of the rock a steep slope of earth pitched off into a gully. The nesting site faced to the south.

Nest number 2 was in the lower foothills, at an altitude of about 800 feet. This nesting bluff also faced south, and was composed of conglomerate overlying soft sandstone. The eggs were laid in a slight depression in the sandstone, several feet back in a horizontal cleft formed by weathering along the plane of contact between the conglomerate and the sandstone base. The height from the base of the cliff to the nest level was about ten feet, but by working along from the end of the ledge, flat on one's face under the overhanging conglomerate, the nest could be reached without a ladder.

Higher on the bluff, and to the left, was a cavity occupied in 1928 by a pair of Horned Owls, apparently using an old raven's nest; in 1930 this nest had again changed tenants, being occupied by another pair of falcons that were photographed from a blind suspended on cables. This nest of 1930 is designated nest number 3, in the note on page 201 of this article.

On April 1, 1928, inspection through glasses from the opposite hill showed at least four and probably five eggs in nest number 1. On the same day a full set of five eggs was counted in nest number 2. On April 15, both sets were found to be still intact, and on going over the cliff to take photographs it was definitely ascertained that nest 1 contained five eggs.

A business trip delayed the next examination of nest number 1 until April 29, when it was found to contain five young falcons, about nine days old, according to subsequent weight comparisons.

Nest number 2, which could not be visited until May 6, then contained four very young birds, believed, after much subsequent study and figuring, to average about three days old. They were weak, had a marked tendency to capsize, and when they did roll over immediately curled up as if still in the shell. Only the most advanced had their eyes part way open, and the others showed very marked and extensive granulation around the unopened eyelids. No remnants of the fifth egg, nor of any chick hatched from it, could be found.

The young in nest number 1 were systematically weighed and photographed in the nest, until the family took to wing some time between May 23 and the next visit on May 30. Those in nest number 2 were weighed, and a selected bird photographed to scale, until they appeared ready to leave the nest when last visited June 6.

The labor and expenditure of time involved were considerable. Several members of my long-suffering family, and a young friend of a scientific turn, were at various times pressed into service as assistants and as rope tenders at nest number 1. When I slid over the cliff there on each trip my pack looked like that of an itinerant peddler starting on a summer's campaign. Doubts were even expressed in some quarters as to the sanity of one who having reached years of discretion and a weight of two hundred, slides over a cliff periodically, draped indiscriminately with two cameras, a tripod, a large focusing cloth, and a set of scales. Doubt ripened into certainty in the latter part of the season, when a butterfly net was added to the outfit, to bring in the wanderers from remote corners of the ledge.

An excellent series of still photographs of this family was taken, principally to show its nest-life. This was supplemented by two short strips of movie film

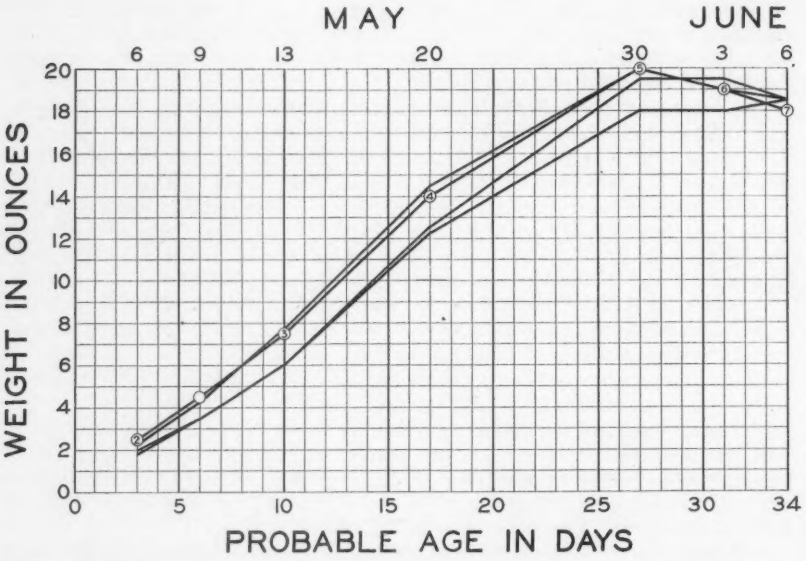

Fig. 41. Diagram showing relation of age and weight of four young Prairie Falcons in nest no. 2. Key numbers in circle refer in sequence to figs. 42 to 47 accompanying this article.

of young and parents, taken by a camera concealed in a concrete "rock" set on the end of the shelf and operated by pulling a fish line. All of these pictures form part of another story.

Weights taken at nest number 1, when adjusted to compensate for age, and for full or empty crop, correspond closely with the longer and more complete record taken at nest number 2, and are therefore not here included.

Such information on the food supply of nest number 1 as could be collected is included in table 1. The extent of this information is, I believe, about what can ordinarily be obtained from periodic examinations of a nesting site. It in no way compares in completeness or in interest with the observations at nest number 2.

The old birds at nest number 2 were extremely interesting. The female was very large and a strong flier, the male was very small, and the swiftest falcon I have ever seen. In their gyrations during my periodic visits, in the perpetual war on the horned owls, and in a fight with an invading male from a neighboring pair, he actually flew circles around the heavier female, despite her marked strength and speed.

Fig. 42. TYPICAL YOUNG FALCON, PROBABLY THREE DAYS OLD AND WEIGHING 2½ OUNCES. MAY 6, 1928. PHOTOGRAPH IS TO VERY SLIGHTLY SMALLER SCALE THAN FIGS. 43-47.

This pair were mighty hunters, remarkable for the variety of their quarry. They also had the habit of bringing in their game intact to the nest, or to a small shelf near the base of the cliff, and there plucking the birds and leaving the remains, after satisfying the ravenous family and their own appetites.

This habit is rare, I believe. Usually the mammals are torn into and partly eaten before being brought to the nest to feed to the young. When the feeding is about completed, the parent lifts the remains in its beak, makes a running start, and on the instant of taking wing shifts the remains to its talons. On some rocky point in the vicinity it then probably cleans off and eats the scraps of meat from the skin and bones, and leaves them where they are never found for record. The larger birds are ordinarily partially plucked before being brought to the nest, and the fag ends are probably carried away at the end of the feast. Smaller birds disappear on the spot as if by magic. This habit of carrying remains away was observed from the blind in 1930.

Fig. 43. TYPICAL YOUNG FALCON TEN DAYS OLD, AND WEIGHING 7½ OUNCES. MAY 13, 1928. SCALE IN FIGS. 43-47 IS IN INCHES.

The unusual opportunity for collecting food data afforded by the individual peculiarities of this pair of birds at nest number 2 was not discovered at first, due to the round-about path followed in removing the young from the nest to a small flat on the opposite side of the gully for photographing and weighing. We thus missed, during our first visits, the small ledge at the base of the cliff, where many of the bird and animal remains were left by the parents. Later in the nest life more and more material was found here and in the nest crevice proper.

None of the material collected from the shelf at the base of the cliff can possibly be attributed to the owl family; the latter had left both the nest and the vicinity about two weeks before food remnants were gathered from any other

location than the falcon's nesting crevice. The combined collection from both ledges gave a large and varied assortment during the latter part of the nest life. At each visit care was taken to clear everything away, thus avoiding duplication in listing.

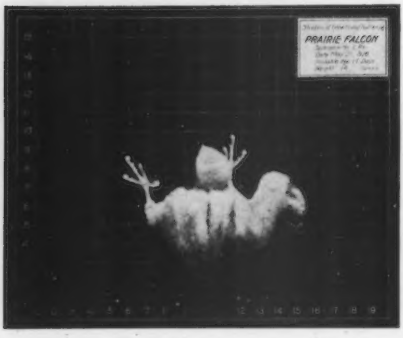

Fig. 44. TYPICAL YOUNG FALCON SEVENTEEN DAYS OLD, AND WEIGHING 14 OUNCES. MAY 20, 1928.

A field list, with as full identification as possible, was made of all material when collected and most of it was then forwarded to the Department of Zoology, Stanford University. There, through the kind cooperation of Professor J. O. Snyder, a detailed analysis (particularly of mammal remains in the pellets) was made by Miss Lydia A. Bowen, then a graduate student in the Department. Thanks are due Miss Bowen for her very careful work. Extreme care was used to prevent duplication in both bird and mammal counts; this conservatism probably leads to an under- rather than an over-estimate of the number of mammals represented by the contents of the pellets.

It is difficult or impossible to estimate definitely the number of animals represented by a given number of pellets from a nest. All the young may receive a full crop of fur from a single large ground squirrel. In a family of five, such as that at nest number 1, this meal might result in five pellets available for analysis from the death of one animal. On the other hand, five pellets found at the roosting place of a mature bird would almost certainly have meant at least five animals killed.

To this list prepared by Miss Bowen for nests numbers 1 and 2, I have added my own lists of materials collected but not sent to her; the combined results are shown in detail and summary, in table 1. The list of nest number 3 (shown only in the summary) includes the material brought in by the pair of birds I was photographing from the blind in the spring of 1930; no special effort was made to make this list absolutely complete by searching out every bone or feather.

After the photograph and movie campaign of 1930 had been completed, four pellets were found on the edge of the mesa, just behind the old bird's lookout rock across the cañon; none was found at the base of the rock. These pellets disgorged by the old birds measured 2.00 x 0.80 in.; 2.12 x 0.88 in.; 1.82 x 0.90 in.; and 2.10 x 0.90 in.; they are notably more compact and symmetrical than those of the young.

Observation of falcons in captivity coupled with the fact that these wild birds deserted their lookout point for the firmer footing of the flat mesa shows that the process of casting up a pellet is a serious and sea-sick business. When the symptoms of "casting" first attack a falcon it draws its feathers down flat, stands up full height, sticks its head and neck outward and upward, and for a few moments looks bereft of its senses. It then starts to duck its head in a series of quick jerks, at the same time contorting its neck violently from side to side. This muscular action appears to force the relatively large pellet from the bird's interior upward into the

crop. The sidewise contortions then cease, and the pellet is cast by a series of up and down pumpings of the head and neck. The bird then stands for a few moments seemingly with the sad question in its mind—"Would a good dose of Mothersills have obviated all of this?" It then shakes itself, resumes its interest in life, and begins to wonder where the next supply of fur and feathers is available.

The diversity of quarry dragged home to nest number 2 and particularly the recurring raids on neighboring Burrowing Owl families are of particular interest.

About twenty-seven days, as shown by the curves and photographs, bring the young falcons to their maximum nest weight of 18 to 20 ounces, with tail and

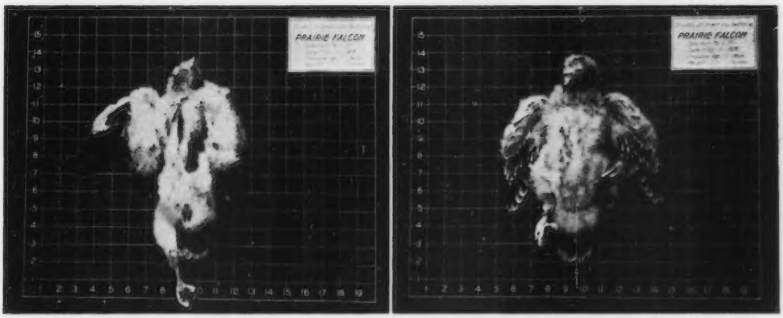

Fig. 45. TYPICAL YOUNG FALCON TWENTY-SEVEN DAYS OLD, AND WEIGHING 20 OUNCES. MAY 30, 1928.

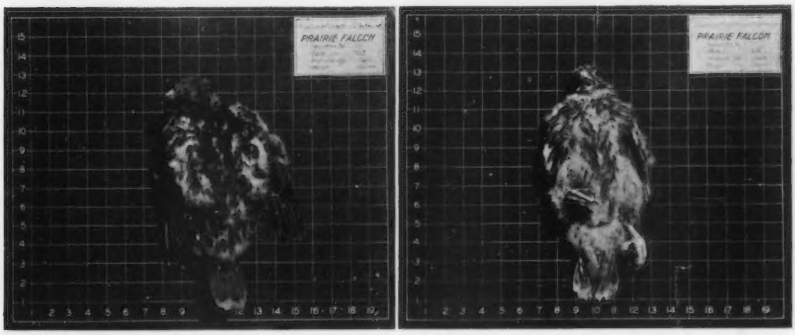

Fig. 46. TYPICAL YOUNG FALCON THIRTY-ONE DAYS OLD, AND WEIGHING 19 OUNCES. JUNE 3, 1928.

main wing feathers and a few tracts on the body well started. Seven days more of ravenous feeding brings out the full feathering, but with a loss of weight. Final development of the wings and tail, and shedding of the down (by this time well hidden by the feathers), is completed after the young are on the wing, but still fed and guarded for an uncertain period by the parents.

Probably a definite weight of meat (with comparatively little variation one way or the other) is required to develop a young falcon from the egg to the day

of flight. Whether this food supply consists of tender birds or tougher rodents probably makes little difference in the total weight consumed. However, toward the end of the nest life the demands of the family are so tremendous that an endless stream of mammals and fair sized birds seems to be the only recourse of the hard-working parents. Small birds could hardly be caught fast enough.

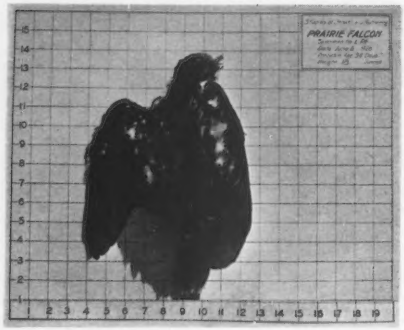

Fig. 47. TYPICAL YOUNG FALCON THIRTY-FOUR DAYS OLD, AND WEIGHING 18 OUNCES. JUNE 6, 1928.

The food actually secured probably depends to a large extent on the locality, the season, and the individual hunting ability of the parents. In the general locality of these studies ground squirrels and meadowlarks (being the most readily available source) probably form a large part of the normal supply of the average falcon family. Here, and elsewhere, it is probably more difficult for the parents to raise a brood hatched a month late than one hatched at the normal time. The hunting ability of the parents is a prime factor in at least the variety of the food supply.

Only by observing a large number of families can a true estimate of the falcon's economic status be established.

The wonderful development that takes place in the young is clearly shown by the curves of figure 41 studied in conjunction with the series of photographs, figures 42 to 47. In these figures is condensed much of the information secured by the expenditure of some fourteen days in the field and fifteen hundred miles of auto travel. They constitute a rather complete summary of the growth of the Prairie Falcon.

In the table occupying the following three pages (199-201) is given the detailed record of my findings in regard to the food of the Prairie Falcon, by the methods described on pages 195-196 of this article.

TABLE 1. DATA ON FOOD COLLECTED AT THREE NESTS

Nest No. 1, Located in the Upper Foothills, Elevation 1700 Feet

Date 1928	Material observed or collected	Count of birds or mammals
April 29	*Birds*	
	Western Meadowlark, a few feathers.	1 Western Meadowlark
	Mammals	
	Seven or eight pellets, one of which contained bones of two spermophile feet; one, the bones of one larger foot; others a few small bones and claws.	2 California Ground Squirrels (probably more)
	Fragments of skin and tail.	
May 2	*Birds*	
	No bird remains.	
	Mammals	
	Nine or ten pellets with a few bone fragments.	2 California Ground Squirrels (probably more)
	A few bits of spermophile skin and bone.	
May 6	*Birds*	
	Western Meadowlark, a few feathers.	1 Western Meadowlark
	Mammals	2 California Ground Squirrels (probably more)
	Eight or nine pellets.	
	A few skeletal parts.	
May 9	*Birds*	
	Western Meadowlark, one rather small foot, one wing and feathers.	1 Western Meadowlark, immature
	California Horned Lark, one feather.	1 California Horned Lark
	Mammals	
	Six pellets, one containing the bones of two fore feet, another the complete hind foot of full-grown Ground Squirrel.	2 California Ground Squirrels (probably more)
	One spermophile leg, and rib section.	
May 13	*Birds*	
	Western Meadowlark, one newly killed bird, and many older feathers.	2 Western Meadowlarks
	Mammals	
	No remnants found.	
May 16	*Birds*	
	Western Meadowlark, three wings (a pair, and one smaller), one head and one foot.	2 Western Meadowlarks, probably both immature
	Mammals	
	California Ground Squirrel, one hind leg and pieces of skin.	1 California Ground Squirrel
	No pellets.	
May 20	*Birds*	
	Western Meadowlark, one leg and some feathers.	1 Western Meadowlark
	Mammals	
	No remnants found.	

Nest No. 2, Located in the Lower Foothills, Elevation 800 Feet

Date 1928	Material observed or collected	Count of birds or mammals
May 6	*Mammals*	
	Nelson Spermophile: One seen in bird's talons.	1 Nelson Spermophile
May 9	*Birds*	
	Western Meadowlark, one wing of very young and feathers of older bird.	2 Western Meadowlarks
	California Horned Lark, a few breast feathers.	1 California Horned Lark
	Mammals	
	California Pocket Gopher, one skull, one pellet of gopher hair, and a few bones.	1 California Pocket Gopher
May 13	*Birds*	
	Mourning Dove, numerous feathers.	1 Mourning Dove
	Other feathers, not identified.	1 Miscellaneous
May 30	*Birds*	
	Burrowing Owl, two wings, probably a pair, from adult.	1 Burrowing Owl
	California Horned Lark, one wing and a few feathers.	1 California Horned Lark
	Mourning Dove, four tail and wing feathers.	1 Mourning Dove
	Rock Wren, right wing.	1 Rock Wren
	Brewer Blackbird, two feathers.	1 Brewer Blackbird
	Western Meadowlark, six wings, probably two pairs, and two left wings; one young and others apparently adult.	4 Western Meadowlarks
	Mammals	
	No mammal remains.	
June 3	*Birds*	
	Burrowing Owl, eight legs, apparently three pairs and two others (one long and one short); also four wings apparently one pair and two left wings.	5 Burrowing Owls, one immature
	Western Meadowlark, four legs (one pair and two odd); eight wings (two pairs and four other rights); two upper and one lower mandible; three tails and miscellaneous remnants.	6 Western Meadowlarks, one immature
	California Jay, three legs (probably one pair and one odd); two pairs of wings; one tail and one head. One bird smaller than the other, but both mature.	2 California Jays
	Brewer Blackbird, one leg; two left wings; feathers.	2 Brewer Blackbirds, adult females
	California Shrike, one small wing.	1 California Shrike, young
	Mammals	
	California Ground Squirrel, remains of five counted on ledge.	5 California Ground Squirrels
June 6	*Birds*	
	Burrowing Owl, three legs and one wing.	2 Burrowing Owls, one adult and one nearly grown
	Western Meadowlark, five legs (two pairs and one extra); three wings (one pair and one small extra); one small tail.	3 Western Meadowlarks

Date 1928	Material observed or collected	Count of birds or mammals
June 6	*Birds (continued)*	
	Poultry, one small white wing about the size and shape of a meadowlark's; probably a Leghorn chick from a neighboring ranch.	1 Chicken (?)
	California Jay, twelve legs (five pairs and two extra rights); five right wings, and six left wings; four tails and three heads.	7 California Jays
	California Shrike, some small tail feathers.	1 California Shrike
	California Horned Lark, one left wing.	1 California Horned Lark
	Four pellets, of which three were chiefly composed of a few bits of bone and a mass of Jay and Meadowlark feathers; the fourth contained also Shrike and Horned Lark feathers.	
	Mammals	
	California Ground Squirrel, remains of two.	2 California Ground Squirrels

Note: Miss Bowen reported that in determining the hair (in the pellets) the microscope was used, and that it was easy to distinguish gopher hair. It was not possible however to distinguish California Ground Squirrel from Nelson Spermophile hair. A few Nelson Spermophiles may have been captured, but California Ground Squirrels certainly predominated. The data for nest no. 3, which was observed only in 1930, are not given above but are included in the summary below.

SUMMARY FOR THREE NESTS

Species	Nest no. 1	Nest no. 2	Nest no. 3	Total
Birds				
Mourning Dove	..	2	..	2
Burrowing Owl	..	8	..	8
California Horned Lark	1	3	..	4
California Jay	..	9	..	9
Western Meadowlark	8	15	1	24
Brewer Blackbird	..	3	..	3
California Shrike	..	2	..	2
Rock Wren	..	1	..	1
Poultry	..	1	..	1
Miscellaneous (unidentified)	..	1	6[a]	7
	9	45	7	61
Mammals				
California Pocket Gopher	..	1	..	1
California Ground Squirrel	9[b]	7[b]	8	24
Nelson Spermophile	..	1	..	1
	9	9	8	26

(a) Probably all California Horned Larks or young Meadowlarks.

(b) Since some of these determinations are from pellets, the numbers listed are a minimum; probably many more are represented by the remains. Also, some here listed as California Ground Squirrel may have been Nelson Spermophile.

Palo Alto, California, May 14, 1931.

SONGS OF THE BAIRD SPARROW

By A. DAWES Du BOIS

One morning I awoke with a new bird song in my ears. *Ippsy-tipsy-tee-e-e* sang the stranger in a charmingly musical voice. His song ran down the scale to the old familiar tune of "Three Blind Mice"; but the *ippsy* and *tipsy* were each rendered with rising inflection. The syllables were clearly enunciated, though the *tee-e-e* ran into somewhat of a trill. During most of the day my *Ippsy-tipsy-tee* sang his delightful little song in the meadow near my cabin; and several of his kind were present for the next two or three days.

The date of this musical innovation was June 25, 1916; and the place was on the prairie of Teton County, Montana. I could catch only glimpses of the singer. He was obviously a sparrow; showed no white in the tail; seemed streaked with blackish above; and was also streaked below.

By July 5 the song had changed. The musical *ippsy-tipsy* was no longer heard; it had been replaced by a couple of monotones not suggestive of the above description. At first I thought that my *Ippsy-tipsy-tee* had gone, and that another species had arrived.

On the tenth of the month the new song was noted as: *s-stick-y—stee-e-e,* with the *stee-e-e* (or *tee-e-e*) a tone or so lower than the *sticky*. Another attempt at phonetic rendering made it *s-spick-y—spee-e-e.* A male bird was taken while singing this song and was identified as a Baird Sparrow (*Ammodramus bairdi*). The sparrows afterward changed their tune several times, proving themselves quite versatile singers. The following records were made while the birds were singing.

July 13: *t'zip-zip-zip-zip-zip-ee-e-e.* This is uttered at the rate of four "zips" per second; all the "zips" on the same note. The *ee-e-e,* which terminates in a trill, is three tones higher.

On the same date another song ran: *zip-zip-zip-zip-zé-dee-e-e.* This whole song is delivered as rapidly as one can pronounce the syllables. It is complete in much less than a second. The *ze,* which is accented, is a half tone lower than the "zips", and the *dee-e-e,* at the end of the song, is about three tones lower than the *ze.*

July 17: A bird in the drier part of the meadow sang five "zips" before the *ze-dee,* in the form described above. One bird sang: *s'stick'-y—steé-e-e-e* (descending). Another: *s'stick'-y—ster-reé-e-e-e-e,* ascending on the terminal *ree-e.* And yet another song was: *zip-ziper-cher-cher-cheree e e e* in which the *cheree e e e* is ascending.

A certain individual sang at regular, brief intervals: *ste-stick-turdle-eé-e-e-e,* the *ee-e-e-e* having rising inflection, with the last portion trilled. And that interrogation was invariably answered, with tireless regularity, by a bird in a different part of the meadow: *st'sticky—stee-e-e-e,* slowly uttered, with falling inflection on the *stee-e-e-e,* and the end running into a trill.

July 19: *stick-sti-stipper-ster-ree-e-e-e.* In this the *stipper* is lower and the terminal trill is higher.

July 24: *ip-si-sticker-sticker-ree-e-e-e,* wherein the *ip-si* and the last of the *ree* are on the same note. The first *sticker* is lower; and the second *sticker* and beginning of the *ree* have rising inflection.

Another song of the same date was recorded thus: *iss-sticky-stee-e-e-e,* in which the *iss* is more pronounced than usual, and the *stee-e-e-e* has falling inflection.

July 26: *zip-si-stiddle-stiddle-ee-e-e-e.* This is not loud; it is musical, and the terminating trill has an unusual warbling quality. The two "stiddles" are lower than the rest of the song.

These sparrows were nesting at the edge of the meadow. A nest containing six eggs was found on July 16; and another with four eggs on July 21.

The next year, Baird Sparrows visited this meadow on May 26; and they were present on May 29, June 3, and June 16. My earliest record for the song was May 24, at another and much larger flooded meadow about a mile and a half away. The song on that occasion was one of the *stee-stick-turdle-turdle-e-e* variations. When I chanced to pass that way on the 16th and again on the 21st of June, several birds were singing. Probably they were nesting there.

In the third summer the Baird Sparrows were casual visitors at my station. I heard them on three occasions: June 30, and July 5 and 18. The songs they brought me were always interesting and pleasing. But I never heard again the dainty, blithesome roundelay of my *Ippsy-tipsy-tee.*

Excelsior, Minnesota, June 30, 1931.

SOME CHANGES IN THE BIRD LIFE OF WESTERN ORANGE COUNTY, CALIFORNIA

By JOHN McB. ROBERTSON

The area which I have under constant observation is about five miles east and west by about three miles north and south, and lies around the towns of Buena Park and Cypress, in western Orange County, California. Lying at the inner edge of the coastal plain it has no marked physiographic features. The agricultural settlement of this region started about forty-five years ago and since that time many changes in its bird life have occurred and some of them are still going on. Some of the more recent changes seem worthy of comment.

My earliest recollection of the Crow (*Corvus brachyrhynchos hesperis*) is as a winter visitor, coming in great straggling flocks, always from the west in the morning, and returning toward the west in the afternoon. They did not come every day, but sometimes for several days in succession, and then were absent for a while. These flocks, containing several thousand birds, straggled along, halting here and there to feed, and then hurrying on, a noisy black rabble, and added a touch of vagabondage to the bird life of those days when they favored us with their presence. On windy days they flew low, taking advantage of every group of trees, and at other times they came over high above us, mere specks against the clouds, or at moderate elevation they hurried by as if bent on important business. Sometimes when flying at a geat height they indulged in what seemed like play; as the individuals of the flock reached a certain place they dove earthward at great speed; with wings set they came down in steep spirals, until the air seemed filled with swiftly moving black specks and the rushing sound could be heard at some distance. At the bottom of this aerial slide they would collect in some open field and then proceed, a few at a time, in their ordinary manner. The winter roost that this flock came from lay somewhere to the west of us in the willows of the San Gabriel or Los Angeles river beds, and was purely a winter gathering place. The earliest date for the flock was November 5, 1923, and December, January, and February were the months when they most often came. Prior to 1921, the latest date in the spring when crows were seen was April 13, 1910, but in that year a few birds were seen at times until about June 15, marking the establishment of breeding birds somewhere within foraging distance.

The winter roost was continued for a number of years but has probably succumbed to the encroaching human occupation, as no large flocks have been seen since December 25, 1927. In the meantime crows have become firmly established as breeding birds and are present in small numbers throughout the year, using eucalyptus trees as nesting sites.

The eastern portion of this area is given over largely to orange groves, and within the last three or four years the California Jay (*Aphelocoma californica californica*) has become established as a breeding bird in the southeastern portion of the area, and individuals have been seen several miles farther west, but always in or near orange groves, which seem to form an acceptable substitute for the natural environment of this bird. This seems to be a gradual encroachment from the east, as jays were resident in Anaheim as early as 1912.

The presence of the crow and the California Jay in the nesting season will, no doubt, call for readjustment among the other nesting birds that have not had these notorious nest robbers to contend with until recently.

A newcomer of quite a different type is the Coast Bush-tit (*Psaltriparus minimus minimus*). Common in the willows of the rivers to the westward and in an olive grove in the hills to the northeastward, they were first noticed in this area in July, 1920, and have since become fairly common throughout the year. The orange groves form the usual habitat of the bush-tit, but they sometimes choose other places to nest. One nest, last year, was in a rose bush growing against the side of a house, and another was in a peach tree in a small family orchard. This season one has been reported to me in an orange tree close to a house, and another in a thick tangle of the so-called asparagus fern growing on the side of a house and close to a driveway. These birds are welcome additions to our bird life.

About thirty years ago a row of Lombardy poplars at the Centralia School furnished nesting sites for Red-shafted Flickers (*Colaptes cafer collaris*); and Sparrow Hawks (*Falco sparverius sparverius*) nested in the holes excavated by the flickers. Since those trees were cut down the Sparrow Hawks have not nested in this area to my knowledge, and it is only within the last three or four years that flickers have found suitable nesting places in power line poles. Two such locations are in use now and flickers are present throughout the year, but the Sparrow Hawk is here only in winter.

Another bird that has recently become resident is the Western Chipping Sparrow (*Spizella passerina arizonae*). Never a very abundant bird even in winter, a few pairs are present each year in the orange groves, and presumably nest, although I have not found a nest.

The Dwarf Cowbird (*Molothrus ater obscurus*) was first observed on May 27, 1923, and has since become quite common. It is noticed mostly in the nesting season when it is conspicuous with its grotesque actions and squeaky notes. I have found cowbird's eggs in the nests of Linnets (*Carpodacus mexicanus frontalis*) and Song Sparrows (*Melospiza melodia cooperi*), but as yet have had no opportunity to observe the development of the young. The adaptability of the young to the supposedly exclusive vegetable diet of the Linnet would make an interesting subject for observation.

The Burrowing Owl (*Speotyto cunicularia hypugaea*) is far less common than it used to be. The elimination of the ground squirrel from the greater part of the area has caused a concentration of Burrowing Owls in the few places where squirrel holes are still available for nesting sites, and the consequent competition for food may account for their decrease. The scarcity of nesting holes sometimes leads these owls to adopt the stand pipes of underground irrigation systems as daytime roosting places, and they probably attempt to nest in them at times with almost certain failure as their reward, as the irrigation season starts before they can raise a brood of young, and they get drowned out. I know of one case where a brood was raised in a pipe line that was no longer in use for irrigation and was broken so that they could get into the horizontal part of it.

These are some of the shifting scenes of the drama of bird life, adapting itself to the changes wrought by man.

Buena Park, California, May 3, 1931.

A NEW SPECIES OF ROAD-RUNNER FROM QUATERNARY CAVE DEPOSITS IN NEW MEXICO

WITH THREE ILLUSTRATIONS

By HILDEGARDE HOWARD

In the summer of 1929, Mr. J. W. Lytle, Mr. H. A. Wylde and Mr. W. L. Bliss excavated a cavern on the east slope of the Organ Mountains, in Dona Ana County, New Mexico. This cavern, which is now known as Conkling Cavern in honor of its discoverer, Mr. Roscoe P. Conkling, aroused no little interest at the time of its discovery, by reason of the occurrence there of remains of man apparently associated with bones of the extinct ground sloth. (See preliminary account of the cavern by Wm. Alanson Bryan, Science, 70, July 12, 1929, pp. 39-41.) The 1929 excavations yielded a large number of mammalian specimens (including not only the ground sloth, but extinct species of horse, camel, and wolf as well), and numerous bird bones.

Among the bird bones are seven which are undoubtedly of the genus *Geococcyx*, but whose large size immediately leads one to question their identity with *Geococcyx californianus*. These bones were taken at different levels and in different parts of the cave and undoubtedly represent several individuals.

With the aid of Miss Leigh Marian Larson's paper on the road-runner (Univ. Calif. Publ. Zool., 32, 1930, pp. 409-428), together with her original measurements on each individual studied, which she has generously loaned, it has been possible to check the size of the fossil bones with measurements of twenty-five or more specimens of *californianus*. To Miss Larson's specimens, the present writer has added two skeletons of *californianus* from New Mexico (shot in the vicinity of the cavern), and specimens from Arizona and Mexico kindly loaned by the United States National Museum. Of all of these specimens, however, there is none which attains the size of the bones from the cave.

That the occurrence of bones of large road-runners in Conkling Cavern is not coincidence, but actually indicates the presence of a form distinct from *G. californianus*, is attested by the discovery, in 1930, of more specimens of large *Geococcyx* in another cave, Shelter Cave, two miles west of Conkling Cavern, on the west slope of the Organ Mountains. Specimens from Shelter Cave include a humerus and femur of even larger size than the corresponding elements found in Conkling Cavern, and tibiotarsi and ulnae which range both larger and smaller, the smaller specimens slightly overlapping the range in size of *californianus* (see fig. 48). In addition to these elements, there is a fragment of coracoid which appears larger, but cannot be measured satisfactorily, and several tarsometatarsi, which, like the tibiotarsi and ulnae, overlap the maximum specimens of *californianus* (fig. 48).

Seven other specimens of *Geococcyx* were found in Shelter Cave, two of which are definitely modern, the other five (including carpometacarpus, tarsometatarsus and tibiotarsi), by reason of their location in the cave and the matrix in which they were embedded, might be of more recent deposition than the typical specimens; none of these bones exceeds *G. californianus* in size.

Omitting the questionable specimens, from the two caves there are twenty-two bones representing seven elements of the skeleton. Of these, fifteen are larger than any available individual of *californianus*, and the others overlap only the largest specimens of that species.

From an even larger group of specimens (seventy) of the same skeletal elements of *Geococcyx*, from the Pleistocene of California (Larson, 1930, pp. 426-428), there is but one bone which exceeds the Recent *californianus* in size, and this but slightly.[1] Otherwise, the size range of the California Pleistocene form is similar to that of the Recent and, as Miss Larson has stated (1930, p. 424), "both should be designated *Geococcyx californianus* (Lesson)."

In view of the foregoing facts, it seems reasonable to conclude that the specimens of road-runner from the New Mexico caves, whose size range obviously does not accord with that of the Recent species, are not identical with the Recent or California Pleistocene *G. californianus*.

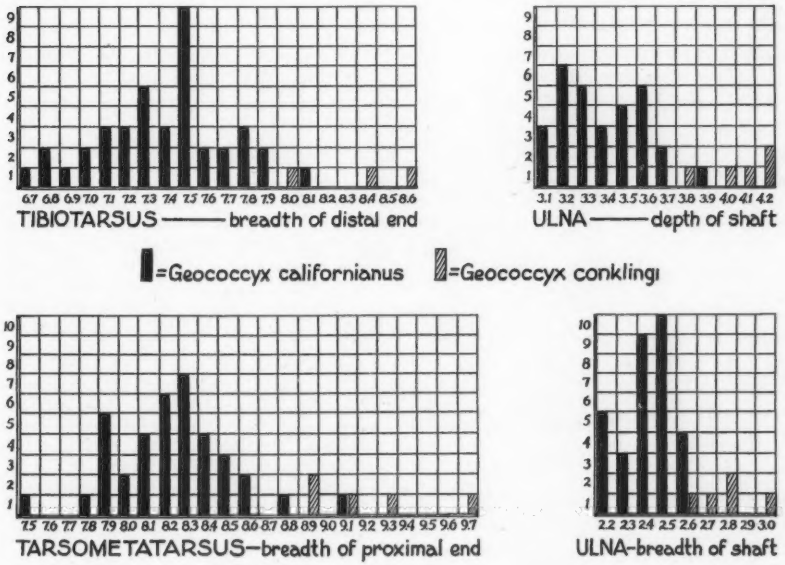
6.7 6.8 6.9 7.0 7.1 7.2 7.3 7.4 7.5 7.6 7.7 7.8 7.9 8.0 8.1 8.2 8.3 8.4 8.5 8.6
TIBIOTARSUS ——— breadth of distal end
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4.0 4.1 4.2
ULNA ——— depth of shaft
=Geococcyx californianus
=Geococcyx conklingi
7.5 7.6 7.7 7.8 7.9 8.0 8.1 8.2 8.3 8.4 8.5 8.6 8.7 8.8 8.9 9.0 9.1 9.2 9.3 9.4 9.5 9.6 9.7
TARSOMETATARSUS—breadth of proximal end
2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3.0
ULNA-breadth of shaft

Fig. 48. CHARTS SHOWING INTERGRADATION OF *Geococcyx conklingi* WITH *Geococcyx californianus* IN MEASUREMENTS OF TARSOMETATARSUS, TIBIOTARSUS AND ULNA. HORIZONTAL FIGURES INDICATE MEASUREMENTS IN MILLIMETERS; VERTICAL FIGURES, NUMBER OF INDIVIDUALS.

Some thought has been given to the degree of distinction which should be drawn between these forms, whether specific or subspecific. Though there is an intergradation in the ulnae, tibiotarsi, and tarsometatarsi, the humeri and femora do not intergrade. Possibly, if more specimens of these elements were available, intergradation would be evident in these elements as well. On the other hand, the femur and humerus may have been proportionately larger in the earlier form. Since we must base our deductions on the characters of the bones at hand and not on the possible

[1] Miss Larson lists one femur (L. A. Mus. no. F1716 from Rancho La Brea) as exceeding the Recent in breadth of proximal and distal ends. I have not been able to duplicate Miss Larson's measurements of this specimen.

intergrading of hypothetical specimens, it seems wiser to regard the New Mexico bird as specifically distinct.

It is therefore proposed that the road-runner of Conkling and Shelter caves, New Mexico, be designated as *Geococcyx conklingi*. The specific name is chosen in honor of Mr. Roscoe P. Conkling who discovered both caves.

The drawing and charts illustrating this paper were made by Mr. H. A. Wylde, the photographs by Mr. H. Wm. Menke.

Geococcyx conklingi, new species

The choice of type material for this species has been a matter of some consideration. Since a single element is scarcely indicative of the bird as a whole, it has been deemed advisable to use the alternative of several cotypes or syntypes as outlined by B. F. Howell (Bull. Geol. Soc. Amer., 40, 1929, pp. 215-220). Conkling Cavern has been selected as the type locality since it was in this cave that bones of the species were first discovered; furthermore the selection of Conkling Cavern facilitates the association of the type specimens with the type locality by reason of similarity in name.

Cotypic material.—Distal end of humerus, Los Angeles Museum number 118, collected by H. A. Wylde and W. L. Bliss in Conkling Cavern at the 32-35 foot level. Generally larger bone than any specimen of *Geococcyx californianus* examined by the writer or listed by Larson. Breadth of distal end 5.6% greater than maximum obtained by Larson. Ectepicondylar prominence forming a more acute angle with the shaft than in *californianus*. This character can best be tested by applying the equal length parallel bars of a pair of calipers to the bone; with one bar resting along the proximal surface of the prominence, the other bar reaches no farther than the external condyle in *conklingi*, while in *californianus* it reaches beyond the internal condyle, and in nine out of seventeen individuals examined, touches the tip of the entepicondyle (fig. 49). Measurements: breadth and depth of distal end, 11.2 mm. and 5.8 mm., respectively; breadth and depth of shaft immediately proximal to ectepicondylar prominence, 7.1 mm. and 3.7 mm., respectively.

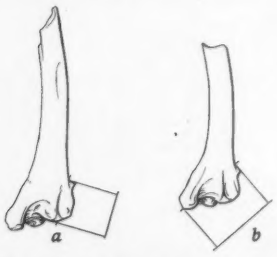

Fig. 49. HUMERI OF *Geococcyx conklingi* AND *Geococcyx californianus*, SHOWING DIFFERENCE IN ANGLE OF ECTEPICONDYLAR PROMINENCE AS REVEALED BY POSITION OF PARALLEL BARS OF CALIPERS; NATURAL SIZE; *a*, *G. conklingi*; *b*, *G. californianus*.

Femur, Los Angeles Museum no. 113, collected by J. W. Lytle in Conkling Cavern at the 29-32 foot level. Trochanteric region broken away. In general similar to *californianus* but larger; length 1% greater than longest of twenty-six specimens of *californianus*, breadth and depth of distal end 6% and 9% greater respectively than the maximum of these measurements in 26 specimens of *californianus*. Breadth and depth of distal end relative to length tending to be greater than in *californianus*. Measurements: length from head to internal condyle, 57.5 mm.; least breadth of shaft, 5.0 mm.; depth of shaft at same place, 4.7 mm.; breadth and depth of distal end, 11.4 mm. and 10.7 mm., respectively.

Shaft of ulna, Los Angeles Museum no. 119, collected by H. A. Wylde and W. L. Bliss in Conkling Cavern at the 35-38 foot level. Depth of shaft 5% greater than maximum of thirty specimens of *californianus*. Breadth of shaft equal to maximum breadth obtained for *californianus*. Measurements: breadth and depth of shaft measured between third and fourth papillae from distal end, 4.1 mm. and 2.6 mm., respectively.

Referred material.—Two shafts of femur, Los Angeles Museum nos. 114 and 115, collected by J. W. Lytle in Conkling Cavern at the 35-38 foot and 23-26 foot

levels, respectively. Breadth and depth of shaft larger than cotypic specimen no. 113 (no. 114, breadth 5.1 mm., depth 5.2 mm.; no. 115, breadth 5.1 mm., depth 5.0 mm.).

One shaft of humerus, Los Angeles Museum no. 117, collected by J. W. Lytle in Conkling Cavern at the 35 foot level. Breadth of shaft at point of maximum curvature, 4.5 mm.; approximate breadth of shaft of specimen no. 118 at this point, 4.3 mm.

One fragment of distal end of tibiotarsus, Los Angeles Museum no. 116, collected by J. W. Lytle in Conkling Cavern at the 23-26 foot level; larger in breadth of shaft (5.2 mm.) than the largest specimen of *californianus*.

Remarks.—The humerus from Shelter Cave resembles the type from Conkling Cavern in the angle of the ectepicondylar prominence, and is of even larger size (breadth and depth of distal end, 11.7 mm. and 6.5 mm., respectively; breadth and depth of shaft above ectepicondylar prominence, 7.3 mm. and 4.2 mm., respectively). Of the other elements from Shelter Cave, the proximal end of femur measures 13.2

Fig. 50. COTYPIC SPECIMENS OF *Geococcyx conklingi*, NATURAL SIZE: *a* and *a'*, ANTERIOR AND EXTERNAL VIEWS OF FEMUR, L.A.M. NO. 116; *b*, INTERNAL VIEW OF ULNA, L.A.M. NO. 113; *c* AND *c'* ANCONAL AND PALMAR VIEWS OF HUMERUS, L.A.M. NO. 118. MILLIMETER SCALE INSERTED.

mm. in breadth and 11.0 mm. in depth, exceeding the maximum of *californianus* by 1.4 mm. in the former and 2.0 mm. in the latter; the two specimens of ulna in which the size of the proximal end can be determined, measure 6.1 mm. and 6.6 mm. in breadth and 5.5 mm. and 6.1 mm. in depth, respectively; other measurements indicating the size of the ulnae, tibiotarsi and tarsometatarsi are included in the charts shown in figure 48; the coracoid cannot be measured but appears larger than *californianus*.

The differences in the mean measurements of *conklingi* (based on bones from both caves) and *californianus* (based on Recent and California Pleistocene bones) are as follows: humerus, breadth of distal end, 1.85 mm.; femur, breadth of proximal end, 2.22 mm., breadth of distal end, 1.46 mm., breadth of shaft, .66 mm.; tibiotarsus, breadth of distal end, 1.11 mm., breadth of shaft, .67 mm.; ulna, depth of shaft, .70 mm., breadth of shaft, .30 mm.; tarsometatarsus, breadth of proximal end, .92 mm.

Los Angeles Museum, June 12, 1931.

FROM FIELD AND STUDY

A Convenient Feeding Table.—The accompanying photograph (fig. 51) illustrates a form of cement feeding table which may be useful to those who wish to maintain a supply of food and water for the birds without the necessity for frequent attention. It is made of pure cement reinforced with nails and wire to prevent cracking. The water in the moat which encircles the table and prevents ants from reaching the

Fig. 51. BROWN TOWHEE AT SPECIAL CEMENT FEEDING TABLE, AS DESCRIBED IN ACCOMPANYING TEXT.

food is automatically replenished from the quart jar, whose metal cover is perforated sufficiently to allow water to run out as needed. A drainage outlet is provided in the side of the food basin, whose overhang helps to keep the water clean.

The California Brown Towhee (*Pipilo fuscus crissalis*), one of which is here shown, is our most indefatigable dooryard forager, and there are few by-products of the dinner table which come amiss.—ROBERT S. WOODS, *Azusa, California, May 21, 1931.*

Authors' Names in "The Condor" Indexes.—In the "Third Ten Year Index to The Condor" for 1919-1928, prepared by George Willett, full names of authors are given when known. The incomplete names number about 30; but three of the authors, John M. Davis, G. Dallas Hanna and Robert S. Woods, maintain that their initials do not represent names, so that the total is reduced to 27.

In the First Ten Year Index no attempt was made to complete authors' names, but in the introduction to the Second Ten Year Index, pp. 7-8, a list of 154 complete names was published, leaving but 31 in the First Index incomplete.

The Second Index gave complete names of all authors except 43, and 17 of these were subsequently published, in 1920, in the Condor (vol. XXII, p. 188). Of the 84 names in the three indexes about one-half have now been completed as follows:

In the First Index:

Alexander, Annie Montague
Burcham, John Samuel
Chambliss, George Schoenberger
Clark, Austin Hobart
Embody, George Charles
Hawkins, Leander Lester
Kofahl, Harry Joseph
Schutze, Adolph Emil
Thomas, Gerald Bamber
Thompson, Charles Sidney
Van Fleet, Clark Crocker
Wright, Howard Walter

In the Second Index:

Burt, Homer Clarence
Carpenter, Nelson Kitwood
Davis, John M. (initial only)
Edquist, Alfred George
Frost, Albert Henry
Herron, Robert Byron
Newberry, Walter Cass
Newbury (not Newberry), Frederick E.
Payne, Harry Thom
Peyton, Sidney Burns
Pomeroy, Harry Kirkland
Reagan, Albert B. (initial only)
Snyder, Gaylord Kenyon
Trafton, Gilbert Haven
Wright, Howard Walter

In the Third Index:

Booth, Edward James
Cayley, Neville William
Chaney, Ralph Works
Clark, Dr. Frank Charles
Cozens, Harold Hammond
Dewar, Dr. John Michael
Falla, Robert Alexander
Henderson, Henry Newton
Hill, Grace Alma
Johnstone, Walter Bagnall
Low, George Carmichael
Loyd, Lewis Richard William
Mauri, Prof. Ernesto
Metzger, Charles Thomas
Myers, Dr. John Golding
Quayle, Ernest Harrison
Walker, Sir Gilbert Thomas
Wolstenholme, Harry

Opportunity may also be taken to correct slight errors in four names: Foster, Goodwin Le Baron (not Lebaron); Mauri (not Maur); Willard, Frank Cottle (not Cattle); and Wolstenholme (not Wostenholme). Of the names still incomplete, 19 are in the First Index, 12 in the Second, and 9 in the Third, but of these last, 4, Dr. Alexandre of Mexico, Francisco C. Grinda, the Paris Brothers, and Col. Velasquez de Leon are almost hopeless, leaving practically but 5 names to be completed, a striking illustration of the care with which the last Index was prepared. Probably few journals of equal age can record such a small percentage of incomplete names of authors, about 40 in 30 volumes.—T. S. PALMER, *1939 Biltmore Street, N.W., Washington, D. C., May 30, 1931.*

The Mockingbird Nests in Santa Cruz, California.—For several years the Western Mockingbird (*Mimus polyglottos leucopterus*) has been familiar to citizens of the southwestern precincts of this city throughout the nesting season, and an individual bird has been reported as seen with nesting materials in its beak. The writer has observed the bird in song since mid-February this year and has seen what he considered to be fully grown young birds of the year, so judged because they were associated in loose groups and were not vocal except for the oft-repeated call note.

On May 9, 1931, a nest with young was learned of which had been under observation for some days. It was fully concealed in a rose bush near a vacant house but was within easy reach from the ground. A visit disclosed a tragedy, for the nest was empty. However, there was found on the ground immediately beneath it a dead fledgling in sufficient plumage for identification. A wing and tarsus sent to the Museum of Vertebrate Zoology brought a prompt confirmation from Dr. Grinnell as its being "nothing else" than *Mimus polyglottos leucopterus*, and as establishing the farthest north nesting station for the mockingbird reported from the coast belt to date.—FRED KLINE, *Santa Cruz, California.*

Lichtenstein on California Birds.—Lichtenstein's second paper on California birds is fairly generally known, although citations to it are generally incorrect in some minor details. The full title is as follows:

Beitrag | zur ornithologischen Fauna von Californien | nebst | Bemerkungen über die Artkennzeichen der Pelicane und über | einige Vögel von den Sandwich-Inseln. | Von | Hrn. Lichtenstein. | [Gelesen in der Akademie der Wissenschaften am 27. Juni 1837.] Physikalische | Abhandlungen | der | Königlichen | Akademie der Wissenschaften | zu Berlin. | Aus dem Jahre 1838. | Berlin. | Gedruckt in der Druckerei der Königl. Akademie | der Wissenschaften. | 1840. | Pp. 417-451, Tab. I-V, colored.

The title page for the "Physikalische" portion of the volume for 1838 bears the date "1840" and this is believed to be correct although the general title page for the volume is dated "1839".

The date cited for the reading of the paper before the Academy, June 27, 1837, is wrong. Upon consulting the "Berichte" (see below) it is found that there was no session held on that date; the reading took place on May 25, 1837.

The paper contains a brief but very interesting account of the travels of H. Deppe, between Acapulco on the south and Monterey on the north, including an overland journey from Loreto, Lower California, to San Diego. A few general remarks on the flora and fauna are given. A comparison is made between the northward extension of certain groups of birds on the east and west coasts of North America; "*Trochilus rufus*" is cited from Sitka (57°, 3′) whereas "*T. colubris*" only extends to 43° N. on the east coast.

Pages 424-428 contain an account of the California Condor. Some of the early history of the species is given and comparison is made with the Andean form. Shaw's name, "*Vultur californianus*", is used in the text but the colored plate (Tab. I) curiously bears "*Sarcoramphus californianus* Licht."

Species No. 2 is new, "*Falco* (*Buteo*) *ferrugineus*", pp. 428-430. It is not illustrated.

Species No. 3 is also new, "*Strix frontalis*", pp. 430-432, and is not illustrated.

Species No. 4 is "*Fringilla hudsonia* Forst.", pp. 432-433.

Species No. 5 is the white pelican "*Pelecanus trachyrynchus* Lath.", pp. 433-448, pl. 2, pl. 3, fig. 5. This account formed an introduction to a review of pelicans, the following species being recognized:

1. Pelecanus onocrotalis Lin., p. 436, pl. 3, fig. 1.
2. Pelecanus mitratus Licht., p. 436, pl. 3, fig. 2.
3. Pelecanus crispus Bruch, p. 437, pl. 3, fig. 4.
4. Pelecanus rufescens Lath., p. 439, pl. 3, fig. 3.
5. Pelecanus trachyrynchus Lath., p. 440, pl. 3, fig. 5.
6. Pelecanus fuscus Lin. Gmel., p. 441, pl. 3, fig. 6.
7. Pelecanus conspicillatus Temm., p. 444.

No mention is made of the Brown Pelican from the west coast.

The remainder of the paper consists of descriptions of the following new species:

Hylomanes momotula, p. 449, pl. 4, col. "Valle real in Mexico".
There is nothing in the title to suggest the inclusion of this description of a Mexican bird.
Hemignathus obscurus, pp. 449-450, pl. 5, fig. 1. "Oahu".
Hemignathus lucidus, p. 451, pl. 5, figs. 2, 3. "Oahu".

I cannot find that Lichtenstein mentioned any definite California localities in this paper for the five species noted above. This deficiency is supplied in his first paper which will now be considered.

This is an abstract of the 1840 paper and was published in 1837 soon after the session of May 25. The full title is as follows:

Beitrag zur ornithologischen Fauna von Neu-Californien. Berichte | über die | zur Bekanntmachung geeigneten | Verhandlungen | der Königl. Preuss. Akademie der Wissenschaften | zu Berlin. | Zweiter Jahrgang | 1837. | P. 75. [Session May 25, 1837.]

The collection was stated to have been made by Deppe at Monterey. Nothing is said of any species from Mexico or Hawaii.

In this paper five species are likewise given, but upon comparing the names with the 1840 paper very pronounced differences appear. The list is transcribed exactly and in order:

Sarcosamphus californianus
Falco ferrugineus
Strix frontalis
Anas icariotis
Pelecanus brachydactylus

The spelling of the genus name of the condor may be a typographical error for "*Sarcoramphus*". Evidently much revision and study were made in the interval between 1837 and 1840 because no further mention of the duck appears. Also the new name for the pelican does not occur again. The names are not accompanied by descriptive matter and all can probably be distributed in synonymy without causing conflict. In some manner Lichtenstein himself failed to refer to his 1837 note in the final paper and this no doubt accounts for its having been generally missed. His receipt of correspondence from Deppe in California was noted at the session of the Academy, May 1, 1837 (Berichte, p. 69), but no details were given.

I am under obligations to Mrs. D. C. Nicholson of the University of California Library for assistance in consulting the volumes noted above. Mr. H. S. Swarth

helped in checking references in the library of the California Academy of Sciences and Dr. L. G. Hertlein assisted with the translation of Lichtenstein's difficult German. —G. D. HANNA, *California Academy of Sciences, San Francisco, May 25, 1931.*

A Near-Tragedy Due to Bird Banding.—A few days after the exhibition of bird-banding equipment at the 1931 Annual Meeting of the Cooper Club, the writer chanced upon a story that should be of interest to all, and of particular interest to bird banders. Before quoting it from the original, the following paragraphs of historical introduction are in order.

In the summer of 1881 Mohammed Ahmed, an Arab religious reformer then living at Abbas Island on the White Nile above Khartum, began to preach resistance to the Egyptian government of the Sudan. In August a small expedition was therefore sent to apprehend him and his band of followers.

This force was ambushed and annihilated on its arrival at Abbas, and Mohammed and his followers took flight westward across the Nile into the Province of Kordofan, where, proclaiming himself the Mahdi (or Mohammedan Messiah), he preached a Jehad or holy war, recruited a large following, defeated and killed or captured all forces sent against him, and finally gathered sufficient force to march on Khartum, capital and military headquarters of the Sudan.

The growing strength of the Mahdi in Kordofan completely isolated the Egyptian forces to the west of it in the Province of Darfur, westward province of the Sudan. These forces in Darfur were under the command of Rudolph Slatin, better known to the world as Slatin Pasha, an Austrian officer in the service of the Khedive. By December, 1883, all hope of relief having vanished, Slatin surrendered and was handed over by the Mahdi, as slave and retainer, to the Khalifa Abdullahi. Khartum was besieged and fell, and General Gordon was murdered, on January 26, 1885, and from that day until September 2, 1898, when defeated and destroyed by General Kitchener at the Battle of Omdurman, Dervish power ruled the Sudan. An incident of this rule (first under the Mahdi, and then under his successor, the Khalifa Abdullahi) was a reduction in the population by war and pestilence from 8,525,000 to 1,870,000.

An attempt to send a letter to Gordon before the siege resulted in Slatin being loaded with chains, and later attempts of his friends and the Egyptian Government to communicate with him placed him in such increasing danger that he dreaded above all things having to translate to the Khalifa any communication intercepted from the outer world.

The following incident[1], then, really capped the climax.

"One day, in the month of December, 1892, when I had just left the Khalifa's door to take a short rest, one of the mulazemin summoned me to the Khalifa's presence. I found him in the reception-room, surrounded by his Kadis, and the threats and reprimands which I had received on the occasion of Taib Haj Ali's calumny were still fresh in my mind. I was therefore considerably dismayed when the Khalifa, without returning my salute, ordered me to take my seat amongst the judges. 'Take this thing,' said he, after a short pause, and in a very severe tone, 'and see what it contains.' I at once arose and took in both hands the object he gave me, and then sat down again. It consisted of a brass ring of about four centimetres in diameter, attached to which was a small metal case about the size and shape of a revolver cartridge. An attempt had been made to open it, and I could plainly see that it contained a paper. This was indeed an anxious moment for me. Could it be a letter from my relations, or from the Egyptian Government, and had the messenger who brought it been captured? Whilst I was engaged in opening the case with the knife which had been given me, I turned over in my mind how I should act, and what I should say; and, as good luck would have it, I had not on this occasion to have recourse to dissimulation. Pulling out two small papers and opening them, I found inscribed on them, in minute but legible handwriting, in the German, French, English, and Russian languages, the following:

[1] Slatin Pasha: Fire and Sword in The Sudan, pp. 298-300.

"'This crane has been bred and brought up on my estate at Ascania Nova, in the Province of Tauride, in South Russia. Whoever catches or kills this bird is requested to communicate with me, and inform me where it occurred.

"'(Signed) F. R. FALZ-FEIN.

"'September, 1892.'

"I now raised my head, which hitherto I had kept closely bent down; and the Khalifa asked, 'Well, what do the papers contain?' 'Sire,' I replied, 'this case must have been fastened to the neck of a bird which has been killed. Its owner, who lives in Europe, has requested that anyone who finds the bird should let him know where it was caught or killed.' 'You have spoken the truth,' said the Khalifa, in a somewhat more amiable tone; 'the bird was killed by a Shaigi near Dongola, and the cartridge case was found attached to its neck. He took it to the Emir Yunes, whose secretary was unable to decipher the writing of the Christian, and he therefore forwarded it to me. Tell me now what is written on the paper?' I translated the message, word for word, and, at the Khalifa's command, also tried to describe the geographical position of the country from which the bird had come, and the distance it had traveled before it was killed. 'This is one of the many devilries of those unbelievers,' he said, at last, 'who waste their time in such useless nonsense. A Mohammedan would never have attempted to do such a thing.'

"He then ordered me to hand over the case to his secretary, and signed to me to withdraw, but I managed to take one more hurried glance at the paper: Ascania Nova, Tauride, South Russia, I repeated over and over again to imprint it on my memory. The mulazemin at the door anxiously awaited my return, and when I came out from the presence of my tyrannical master with a placid countenance they seemed greatly pleased. On my way to my house I continued to repeat to myself the name of the writer and his residence, and determined that should Providence ever grant me my freedom I should not fail to let him know what had happened to his bird."

On February 20, 1895, about two years later, Slatin Pasha escaped from Omdurman, and after a soul-trying flight through the desert reached Assuan, upper Egypt, on the 16th of March, proceeding thence to Cairo. The end of this incident is quoted from his own words.

"A few days after my arrival, when seated on the balcony of the Agency, and looking down on the garden all fresh with the verdure of spring, I espied a tame heron stalking across the flower-beds. Instantly I thought of Falz-Fein of Ascania Nova, in Tauride, South Russia, and I hurried to my room, and then and there wrote to him a full account of the crane which he had released in 1892, and which had been killed in Dar Shaigia. It was the greatest pleasure to feel myself in a position to give the former owner of the bird an accurate account of what had happened; and soon afterwards I received a reply from Mr. Falz-Fein, who possesses a large estate in the Crimea, thanking me warmly for my letter, and inviting me to pay him a visit, which, unfortunately, the numerous calls on my time have hitherto prevented me from accepting."—F. H. FOWLER, *Palo Alto, California, May 19, 1931.*

The Dwarf Cowbird in San Benito County, California.—On May 10, 1931, H. W. Carriger while collecting along the San Benito River near Betabel located a nest of the Golden Pileolated Warbler (*Wilsonia pusilla chryseola*) with one egg of the warbler and one egg of the Dwarf Cowbird (*Molothrus ater obscurus*). This he left undisturbed and very kindly turned over his interest in the find to the writer who collected the completed set on May 15, when it contained two eggs of the warbler and the cowbird's egg. The egg of the parasite was found to be the farthest advanced in incubation. Four eggs constitute a normal set for this warbler and one or more eggs may have been destroyed by the cowbird at the time of its own laying. The nest was typical of this warbler and was concealed twelve inches up in poison oak. This is our first record of the cowbird for this section. As yet no birds have been noted.—W. E. UNGLISH, *Gilroy, California, June 22, 1931.*

Black-footed Albatross on San Francisco Bay.—For several years past I have kept careful record of the birds seen in my daily "commuting" across San Francisco Bay,

between the San Francisco Ferry Building and the Key Route terminal on the east shore. This has resulted in an accumulation of data of some interest and of possible value in the mass, but rarely is any single observation worthy of separate record. The subject of the present note, however, is distinctly of the exceptional sort that deserves some emphasis.

On May 14, about 3 p. m., as I sat on the upper front deck, my usual post of observation, the boat still in the San Francisco slip, a large, dark-colored bird swept past, headed southward, to disappear behind the projecting piling while my benumbed senses were still struggling to register and recognize the impossible apparition. As we emerged from the slip a few moments later the bird returned, skimming low over the water, at one time not more than one hundred yards distant—unmistakably a Black-footed Albatross (*Diomedea nigripes*). It circled about in plain sight for some time and then disappeared toward the Golden Gate, attended by a cloud of gulls and giving a distant impression as of a blue-bottle fly in a swarm of gnats. There was a brisk north wind blowing at the time but nothing approaching stormy weather; the bird itself did not act or appear otherwise than normal.

Years ago, on different occasions, I have seen Black-footed Albatrosses not uncommonly on the open sea between Puget Sound and Los Angeles, and the species is known of course as of regular occurrence along this coast. This is the first time, though, that I have seen one in sheltered waters. Along the "inside passage" between Seattle and Skagway, for example, shearwaters may be counted upon to appear in abundance at certain places and at certain seasons, but an albatross never, in my experience, although there are sounds where this passage is not sheltered from the ocean swell.

Our authoritative "Directory to the Bird-Life of the San Francisco Bay Region" lists three species of albatross. The Black-footed Albatross "comes occasionally within sight of land;" the Short-tailed Albatross was "observed once near Goat Island, March 10 (year unknown);" while of the Yellow-nosed Albatross "a skull was found on the ocean beach near San Francisco some time previous to 1868." The moral of my own observation may be that even an ancient picked-up skull is not deserving of scorn as circumstantial evidence apparently indicating what would really be a not impossible occurrence.—H. S. SWARTH, *California Academy of Sciences, San Francisco, May 19, 1931.*

Concern Exhibited by Wild Birds in the Troubles of Others.—My house is on the top of a spur running due west from the hills in the higher part of Piedmont, Alameda County, California; a bench mark at the highest part of the garden is 504.97 feet above whatever datum is the basis of Oakland city surveys. Except for the house and garden, the spur is covered with live oaks and pines, the latter being Monterey pines planted probably about thirty years ago. The natural undergrowth is hazel, toyon, blackberry, gooseberry, currant, California sage, etc. I have also planted quite a lot of shrubbery of various kinds, fruit trees, small fruits, etc., have plenty of water for the birds, kill the cats and certain hawks, and when I catch the snakes around the nests I escort them to other fields of activity. Hence the birds seem to like it here and I have counted twenty different kinds (July 4, 1930) at one time without moving from one spot, and several kinds nest here.

A Spotted Towhee has been rearing its second brood of the season among some nasturtiums underneath an oak. This morning on inspecting the nest I found the young had left, and the parents expressed great concern at my presence, much more than usual. I first suspected a snake but could find none.

Within five minutes there were gathered within six to forty feet of me the following birds, some in the branches over my head and some in nearby trees, all either watching and sitting quietly or else hopping about near the parent birds: 2 Spotted Towhees; 4 or 5 California Towhees; 2 Juncos (Point Pinos?—they nest here); 2 Robins, with angle-worms in their bills; 4 Hummingbirds, some Anna and some Allen; 5 or 6 Purple Finches; 1 Plain Titmouse; several Bush-tits; 1 Wren-tit; 1 Vigors Wren; 1 Lazuli Bunting; 1 Song Sparrow; 2 Quail; 1 Russet-backed Thrush. There may have been more individuals and more species, but this is all I am sure of having seen definitely at this one time.

About five hours afterward I went to have another look and the towhees started complaining again. This time there appeared almost immediately: 4 Goldfinches (Willow?); 2 Robins, still with angle-worms; several Anna and Allen hummers; 2 Juncos; 2 Wrens; 2 Purple Finches; several California Towhees.

The hummingbirds, juncos, wrens and goldfinches made the most protest. The robins and quail seemed very placid and little concerned, more curious than anything else. The attention of all seemed to be concentrated more on the parent birds than on me, yet none of them, including the parents, in the midst of all of the excitement, appeared to overlook a chance to capture a bug when opportunity offered. These towhees have, in season, been mewing at me and suspecting me of having my pockets full of their young for four years; but this is the first time they have managed to get together an audience, and I am still wondering if there was not a snake in the grass after all. I pulled one out of their nest last year after he had swallowed one youngster.—ERNEST I. DYER, *Piedmont, California, June 9, 1931.*

Cryptoglaux funerea in New Mexico.—Among the bird remains found by the Los Angeles Museum in Shelter Cave, Dona Ana County New Mexico, are a rostrum and tarsometatarsus of a small owl. These bones in all respects resemble specimens of *Cryptoglaux funerea richardsoni* kindly loaned by Dr. Wetmore from the United States National Museum collections.

The occurrence of *C. funerea* in the southwestern part of New Mexico is noteworthy in view of our present records of its distribution. Of the two subspecies known to North America, *C. funerea magna* is recorded only from the extreme north of Alaska, and *C. funerea richardsoni* has never been recorded south of Crested Butte, Gunnison County, Colorado (Cooke, Bull. 44, Col. Agric. Exp. Sta., 1898, p. 160, as cited in Ridgway, Bull. 50, U. S. Nat. Mus., pt. 6, 1914, p. 627).

In view of the exact correspondence of the cave bones with those of *C. funerea richardsoni*, as well as the present distribution of the two subspecies known in North America, one naturally supposes that the cave specimens are of *richardsoni*, though to make a definite statement with regard to subspecies is scarcely the paleontologist's prerogative.

The bones of this owl are perfectly preserved in their natural state. They were embedded in a light colored, unconsolidated matrix of fine texture and were closely associated with bones of the extinct *Geococcyx conklingi* described in this issue of the *Condor*. Mammalian remains of this cave deposit include bones of the extinct ground sloth, horse, and antelope (*Tetrameryx*).—HILDEGARDE HOWARD, *Los Angeles Museum, July 2, 1931.*

Odd Nesting Site of Ash-throated Flycatcher.—On July 3, 1930, an infertile egg of the Ash-throated Flycatcher (*Myiarchus cinerascens cinerascens*) was brought to me by Rex Parker with the statement that it had been taken on June 19, from a nest containing three young birds and that the nest was in the boom of a gasolene engine shovel which had been in operation almost every day in loading clay. I visited the site, about four miles southeast of Colton, California, where the Triangle Rock and Gravel Company was busy digging clay, and Gerald Mathews, who was in charge of the shovel, showed me the nest (fig. 52).

It was of usual construction with heavy lining of fur and hair and was down three feet in a cavity on the underside of the boom and well out toward the end. The boom made the usual turn after every dipper full of clay and the shovel moved on caterpillars along the face of the clay bank, covering as much as 200 feet in a single day. Mathews told me that the last young bird had just left the nest and that he was forced to shut the machinery down to keep the youngster from injury.

It seemed to me that this most unusual nesting site must have been selected on some day when the shovel was not in operation and that nest building advanced so far that the birds would not desert. I thus looked forward with much interest to see if the birds, after the 1930 nesting season with noise, jar, and ever changing location, would return in 1931, after their migration to the South.

In May, 1931, the birds were working on the nest in the old site (except that the old hole had become so filled with clay that the nest was down only a foot from the entrance). The shovel was busy digging clay on June 6 and Mr. Mathews told

me the bird was incubating four eggs. While not doubting my informant I "had to be shown". When there was a little lull in the work he raised the dipper up near the hole and then climbed out on it and just as soon as he placed his face near the entrance the bird flushed. He climbed down and started the machinery and the bird returned. The nest contained four young birds on June 7.

The usual loading operation was under way on June 17 and the bird was busy bringing food to the hungry brood. After one trip the shovel started to back away from the clay bank and there was a big slide of hundreds of tons of clay to the place where the shovel had just been standing. The bird came on the changed scene with

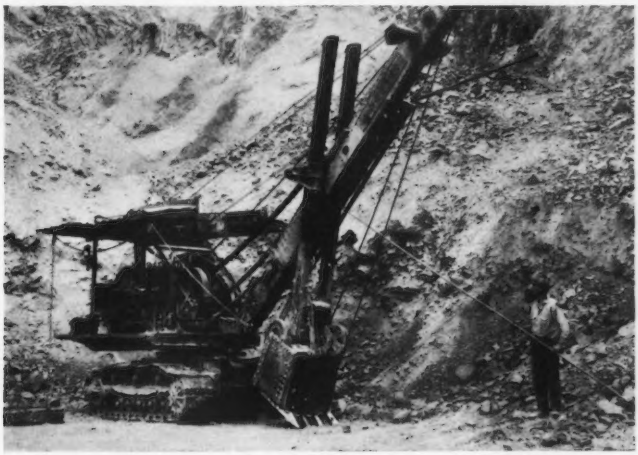

Fig. 52. NESTING SITE OF ASH-THROATED FLYCATCHER; ARROW POINTS TO PLACE UNDER BOOM WHERE THE BIRDS ENTERED; LOCATION OF 1930 NEST NEAR END OF STICK IN MR. MATHEWS' HANDS; 1931 NEST WAS ABOUT A FOOT BELOW POINT OF ARROW.

food and landed on the dipper of the shovel and then into the nest where it remained while the shovel moved seventy feet. Out it flew again and when it returned to the nest a few minutes later the shovel had moved 180 feet to a new site where it had not been for at least a month.

Both birds were making frequent trips to the nest with food on June 25, and the four healthy young ones in the moving home were calling for food and more food at the tops of their voices which could often be heard even above the noise of the machinery. Without some unforseen accident, yet to take place, the birds seem to have chosen a good site.

I termed the selection in 1930 as an accident, but in 1931 it must have been a matter of choice.—WILSON C. HANNA, *Colton, California, June 26, 1931.*

On the Breeding of Puffinus chlororhynchus in the Tonga Group.—Through the efforts of Mr. Edward Winslow Gifford, Curator of the Museum of Anthropology, University of California, it has become possible to add another nesting station to the known breeding range of *Puffinus chlororhynchus*[1]. Specimens of this species were secured on Kelefesia Island, Nomuka Group, Tonga Islands, on January 6, 1921. Of the collecting of these examples Mr. Gifford wrote: "The birds were obtained for me by natives. . . . They report the birds nesting in burrows about a yard long, dug

[1] Cf. Loomis, Emu, XXIII, 1923-1924, pp. 283-284.

by the birds, not merely among rocks. There were eggs in the nests, but no young. The sexual organs of the five I am sending showed some enlargement, but not to the maximum size."

Birds of this species are already known to breed in the Indian Ocean in the Seychelle (Cousine and Aride[2]) and Mascarene (Round and Réunion) islands; in western Australia (Dampier Archipelago, Slope, Rat, Rottnest, Abrolhos, Seal[3], and Carnac islands); in eastern Australia (Raine, Capricorn, South Solitary, North Coff's, Five, Brush, Broughton, Big Cabbage Tree, Big, Bird, Tollgates, and Montague islands); in the south Pacific (Lord Howe, Norfolk, Kermadec, Surprise[4], Vatom[5], McKean's, Willis, Vavitao[6], Borabora[7], and Kandavu[8] islands); and in the north Pacific (Pescadores, Bonin, Sulphur, Marcus, ?Caroline, ?Krusenstern, Midway[9], and ?Fanning[10] islands; the Hawaiian Archipelago: Kauai, Necker, and Laysan islands; Bird, French Frigate, and Lisiansky[11] islands; and San Benedicto, Revillagigedo Islands).

In many insular species, isolation tends to the development of island variations; and in the case of *Puffinus chlororhynchus* variations in both color and size appear. The light phase is dominant in Micronesia, the dark in the south Pacific and Indian oceans. White-breasted birds are common in the Hawaiian Islands, but they occur also in lesser numbers in the Revillagigedo Group and in the islands of the south Pacific and Indian oceans. Variations in size as well as in color have led to the recognition of many subspecies.

The specimens from Kelefesia Island (now in the collection of the B. P. Bishop Museum) are all in dark plumage. They yielded the following measurements:

		Wing	Tail	Culmen	Upper mandible: Basal depth	Upper mandible: Basal width	Tarsus	Middle toe and claw
2 males	Min	280.0	128.0	41.0	11.0	16.0	45.0	57.0
	Max.	298.0	143.0	41.5	11.0	16.0	48.0	62.0
	Av.	289.0	135.5	41.25	11.0	16.0	46.0	59.5
3 females	Min.	278.0	130.0	38.0	10.5	15.5	43.0	53.0
	Max.	296.0	139.0	41.0	10.5	17.0	48.0	59.0
	Av.	289.0	135.0	39.0	10.5	16.2	46.0	56.3

In average measurements as well as in relative proportions the Tongan birds differ from those breeding in the Hawaiian, Fijian, and Kermadec groups, and the application of a new subspecific name might be deemed justifiable. However, the range of variation exhibited in a large series of this shearwater from one breeding station makes it desirable that the characters of a new subspecies be derived from a more extensive series than the one under examination.—M. E. McLellan Davidson, *California Academy of Sciences, San Francisco, California, May 20, 1931.*

New Records from the Channel Islands of Southern California.—During the past two years the writer and A. J. van Rossem have together and separately made many trips to the Channel Islands off the coast of southern California and the following records relating to the extension of known ranges of birds have been obtained, all of which are believed to be new.

Larus californicus; *Larus delawarensis*; *Puffinus opisthomelas*; *Podasocys montanus*; *Buteo borealis calurus*. On December 28, 1930, while at San Miguel Island van Rossem noted the above five birds new for that island. Both gulls were noted in small numbers and several Red-tails were seen. The Mountain Plover was present abundantly on the island, while the Black-vented Shearwater was likewise abundant off-shore.

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[2] Oustalet, Bull. Soc. Phil. Paris, 1877-1878 (1878), p. 191.
[3] Sandland, Emu, XXX, 1930-1931, p. 297.
[4] Campbell and White, Emu, X, 1910-1911, p. 203.
[5] Stresemann, Orn. Monats., XXXVI, 1928, p. 83 (Uvatom=Vatom).
[6] Beck, Nat. Hist., XXIII, 1923, p. 33 (Ravaivai=Vavitao).
[7] Brigham, Occas. Pap. B. P. Bishop Mus., II, no. 2, 1904, p. 17.
[8] Lowe, Bull. B. O. C., XLV, 1924-1925, p. 106.
[9] Bartsch, Auk, XXXIX, 1922, p. 466.
[10] Ogilvie-Grant, Bull. B. O. C., XXIX, 1911-1912, p. 102.
[11] Munter, An. Rept. U. S. Coast Guard, 1915, pp. 130-140.

Lophortyx gambeli gambeli. While we were at San Clemente Island on October 25, 1930, van Rossem collected an adult male Gambel Quail. One must assume that the bird had been introduced there but the details are lacking. This is of course a new record for any of the islands.

Ceryle alcyon. During the past three years a single individual has always been seen by the writer and his companions whenever we visited Santa Barbara Island. Through an oversight the published statement of its occurrence there has not heretofore been made. The bird was seen last on August 9, 1930.

Colaptes cafer collaris. The remains of a dead flicker were seen by van Rossem on San Miguel Island on December 28, 1930.

Myiarchus cinerascens cinerascens. Six of these birds were seen by us on Santa Barbara Island on August 9, 1930. The species has been recorded before only from Santa Cruz Island.

Sayornis sayus; *Sayornis nigricans.* Both of these phoebes were seen by van Rossem on San Miguel Island on December 28, 1930, and a specimen of the former was collected.

Passerculus rostratus rostratus. A specimen of this bird was collected by van Rossem on San Miguel Island on December 28, 1930. This is a new record for the islands.

Zonotrichia leucophrys gambeli. This species was abundant on San Nicolas Island on February 24, 1929, and a specimen was collected by van Rossem.

Passerella iliaca sinuosa; *Hylocichla guttata guttata.* Specimens of both these birds were collected by van Rossem during our visit to Santa Barbara Island on February 25, 1929.—J. R. PEMBERTON, *Beverly Hills, California, May 2, 1931.*

The Breeding of the Mockingbird in the San Francisco Bay District.—For many years mockingbirds (*Mimus polyglottos leucopterus*) have been known as rare winter visitors to the San Francisco Bay region. Grinnell and Wythe (Pacific Coast Avifauna no. 18, 1927, p. 138) have summarized the occurrence of this species by citing earliest and latest dates of record as September 5 and the "latter part of April." Grinnell (Auk, XXVIII, 1911, p. 299) described the fall movement of mockingbirds from the interior valleys of California to the coastal region and attributed the movement to the relatively higher temperature in winter near the coast compared with that of the interior. In spring and summer the interior is much warmer than the coast and, according to him, in response to temperature the mockingbirds return to the interior, thus failing to breed along the coast in central California. Factors other than temperature seem to have increased the number of mockingbirds in the Sacramento and San Joaquin valleys during the past twenty years as these valleys have been extensively cultivated and in many places planted to orchards. It is significant, therefore, to observe the conditions attending natural experiments in the invasion of the San Francisco Bay district during the breeding season by this species. Edge (Condor, XXXIII, 1931, p. 75) has reported the taking of a mocker at Healdsburg, Sonoma County, on August 17, 1930. This specimen which is in worn juvenal plumage suggests that mockingbirds may breed at this locality. Healdsburg, however, is fairly well shut off from the cooling effect of the coast, and one might well expect the mockingbird to invade this region as a breeding form.

On February 17, 1930, at Solano and Thirty-seventh streets, Richmond, Contra Costa County, a single mockingbird was seen and heard by the writer, singing its full spring song from the top of a telegraph pole. This neighborhood is a partly built-up residential district with acacia trees along the streets and many grassy fields between the houses. Mockingbirds were looked for casually several times later in the 1930 season but were not seen again. However, on March 27, 1931, a pair of mockingbirds was discovered by Mr. Dean Blanchard and myself a quarter of a mile east of the point where the one bird was observed in 1930. This pair fed along the gutters and in the acacia trees and gave no sign of breeding activity except that the two birds were constantly near one another.

A week later apparently the same pair was watched building a nest in an acacia at the corner of Thirty-fifth and Esmond streets. One bird carried sticks while the other accompanied it and sang occasionally. On April 19, Blanchard climbed to the nest and found that it contained two eggs. A second nest was found on the same

morning at Thirty-sixth and Garvin streets, 150 yards distant from the first nest. All four birds were seen within a few minutes. This second nest was being built by both birds of the pair and like the first was situated in an acacia. It was only one hundred yards distant from the place where the bird was seen in 1930 and suggests that the mockingbirds may have nested here in 1930 even though I did not find them.

On May 5 the second nest contained four incubated eggs whereas something had destroyed the first nest, removing almost the entire structure. The first pair was still present, however, and on May 7 was seen building another nest not far away. The four eggs in the nest at Thirty-sixth and Garvin streets were hatching on the morning of May 10 and on May 12 one of the four young was preserved for record (no. 57966, Mus. Vert. Zool.). The female was brooding the young closely on this last visit to the nest, the whole region being swept by a strong wind and a low fog coming from the nearby bay.

It is diffcult to believe that temperature in itself is the only important factor limiting the distribution of the mockingbird in central California. This locality at Richmond is well exposed to cold winds during the spring and summer. Many points within the San Francisco Bay region are warmer at this season than this particular spot where the mockers have established a breeding outpost. I believe that the nature of the acacia trees and fields, which seem to be identical with conditions in certain places in southern California where mockingbirds abound, may have induced winter stragglers to remain and nest. It remains to be seen whether the mockingbirds can maintain their foothold in this region.—ALDEN H. MILLER, *Museum of Vertebrate Zoology, Berkeley, California, May 12, 1931.*

Unique Nesting Site of Santa Cruz Chickadees.—One morning early in May, 1931, while walking through the Whale Court, at the California Academy of Sciences, Golden Gate Park, my attention was attracted by some Santa Cruz Chickadees (*Penthestes rufescens barlowi*) that were collecting insects among the vines on the whale

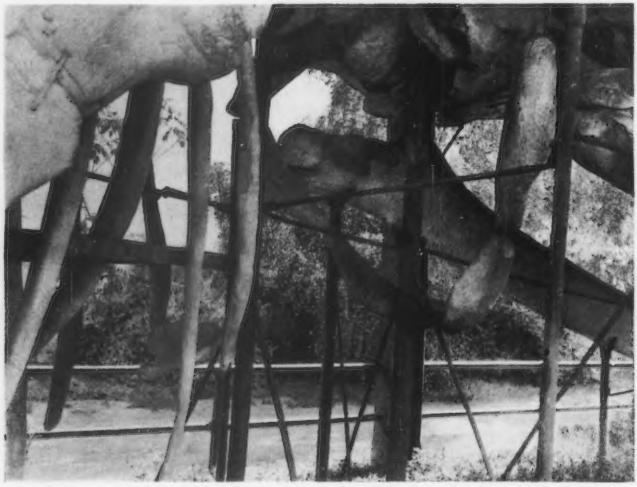

Fig. 53. NEST OF SANTA CRUZ CHICKADEE IN MANDIBULAR FORAMEN OF SULPHUR-BOTTOM WHALE; CALIFORNIA ACADEMY OF SCIENCES, SAN FRANCISCO, MAY 9, 1931. LOCATION OF NEST INDICATED BY ARROWS.

shed. A few moments of watching located the nest; the birds were going in and out of the large mandibular foramen on the inside of the left mandible of the huge Sulphur-bottom Whale skeleton under the shed! (See fig. 53.)

Natural nesting places for chickadees seem to be scarce in the Park, and the birds' choice may have been a clever one but it did not prove to be a wise one. It happened that right after I had left the court there appeared some live specimens of the ubiquitous small boy, evidently of an undesirable subspecies, and these also noted the parent birds entering the hole with full bills and coming out with empty ones. To make things even more interesting, the boys began to throw stones at the birds just as I reached my quarters (happily overlooking the scene) and the rattle of pebble against bone aroused my suspicions and saved the day. A prompt descent resulted in the rescue of the chickadees, large and small, but it was a close squeak. The small boy troop had already found an empty wooden drum and with its aid had reached the opening in which reposed the nest, but apparently no arm among its members was long enough to reach the nestlings, even though the boys had succeeded in pulling out a bit of the nest lining. After my charge the enemy fled in such panic that they did not dare return and the little brood was finally reared in peace.—JOSEPH MAILLIARD, *California Academy of Sciences, San Francisco, June 13, 1931.*

Where California Ornithologists Rest.—Decoration Day was established primarily in memory of the men who enlisted in the military service and a visit on this day to Arlington or any other National Cemetery will show a marked contrast in the respect paid to military men and that paid to those who have devoted their lives to science. There is no national or other special burial place for scientific men, and in the case of an ornithologist, seldom is the last resting place recorded except in the funeral notice in the daily paper.

Particularly is this true of California, and any one who desires to know the resting place of a deceased member of the Cooper Club is likely to experience considerable difficulty in securing the information unless he can somehow communicate with the immediate family of the member. This condition should not continue. If it is important to record a member's death it should also be worth while to mention the place of burial as well as the place of death, for the two are sometimes far apart. A. J. Grayson died in Mazatlan, Mexico, but is buried in San Francisco; Bradford Torrey died in Santa Barbara but is buried at his old home in South Weymouth, Massachusetts.

As a slight contribution to this subject the following notes are given on some of the older California ornithologists in the hope that others will add to the list such information as they may have.

Barlow, Chester, 1874-1902, Mountain View, Santa Clara County.

Belding, Lyman, 1829-1917, Stockton, Rural Cemetery.

Bridges, Thomas, 1807-1865 (first resident California ornithologist), San Francisco, Laurel Hill Cemetery, South Ridge, Tier 58, Lot 24.

Bryant, Walter Pierce, 1861-1905, Santa Rosa, Rural Cemetery, Bryant Lot (grave unmarked in 1929).

Cooper, James Graham, 1830-1902, Oakland, Mountain View Cemetery, Plot 31, Lot 15.

Gambel, William, 1819?-1849, Rose's Bar, Feather River (grave obliterated).

Grayson, Andrew Jackson, 1819-1869, San Francisco, Masonic Cemetery, Pioneer Plot, No. 26.

Hepburn, James, 1811-1869, Victoria, B. C., Quadra St. Cemetery (stone moved back against fence).

Holmes, Frank Henry, 18—-1924, San Jose, Oak Hill Cemetery, Lot 32, Section Bb, Grave 2 w.

Ready, George Henry, 1858-1903, Santa Cruz, Catholic Cemetery (100 feet from southwest corner).

Thurber, Eugene Carleton, 1865-1896, Alhambra, San Gabriel Cemetery.

Torrey, Bradford, 1843-1912, South Weymouth, Mass.—T. S. PALMER, *1939 Biltmore Street, N.W., Washington, D. C., May 30, 1931.*

Bird Notes from Western Montana.—In "A Distributional List of Birds of Montana", by Aretas A. Saunders, the Great Blue Heron (*Ardea herodias herodias*) is listed as a common summer resident east of the continental divide in Montana, but only as a migrant west of the divide. It was reported to me that there were heron nests east of Missoula near Drummond; so, on June 13, 1931, a friend and I drove to this place to investigate. About sixty miles east of Missoula, on the banks of the Missoula River (farther west called Clark's Fork of the Columbia River), we found a heronry. The nests were located near the tops of tall living cottonwood trees. As the foliage was quite dense in places and as our observations were made from the opposite bank of the river, it was difficult to tell at this time just how many nests were there. From one position, however, we counted ten or eleven nests, a total of nine adults (sometimes two to a nest), and could see several young moving about in the nests. This would seem to establish a nesting record for the Great Blue Heron in western Montana.

As we drove along the road looking for the heron colony our attention was first attracted by a nest with a large bird sitting on it. Later we found this to be the nest of a Western Red-tailed Hawk (*Buteo borealis calurus*), located near the center of the heronry. We saw the hawk carry food to the nest and could see young moving about therein. The herons seemed to pay no attention to this neighbor. Saunders' records would seem to indicate that in western Montana most nests of the Red-tail are found on rock-cliffs rather than in trees.—CAROLINE WELLS, *Missoula, Montana, June 17, 1931.*

Nesting of Tolmie Warbler in Southern Santa Clara County, California.—Tolmie Warblers (*Oporornis tolmiei*) were first noted by the writers at Betabel, San Benito County, on May 28, 1931. One pair was located by Carriger and one female by Unglish. On June 6, 1931, a search was again made for nests and one with two eggs was discovered by Carriger along the banks of the Pajaro River in Santa Clara County. This nest was left with the hope of obtaining a complete set. About two miles down the river on the San Benito side another bird was noted by Carriger but no nest found.

On June 12, 1931, the above set was taken by Unglish when it consisted of three eggs with incubation well begun. The foundation of the nest was composed of bright new dried grass and weed stems, the upper part of dark-colored weathered grass blades, and the lining of long black horse hairs. It was placed 20 inches up in a tangle of weeds and blackberry vines. This appears to be far south of the bird's general breeding range in the coast region.—H. W. CARRIGER and W. E. UNGLISH, *Oakland* and *Gilroy, California, June 22, 1931.*

EDITORIAL NOTES AND NEWS

This year's Annual Meeting of the American Ornithologists' Union will be held, October 19 to 23, at Detroit. This meeting place is relatively far west and should make possible the attendance of many bird students unable financially to attend meetings on the Atlantic coast. There should thus be a large attendance from the Mississippi Valley states and from Canada. Detroit is also much more reachable from California and the Pacific coast states generally than such cities as New York and Washington where A. O. U. meetings have mostly been held. However, even from the farthest distance, any earnest student of birds will find it worth his while regularly to go to the A. O. U. meetings. There are points brought out in the discussions of the papers on the programs that the printed reports never indicate. And, indeed, a considerable number of the papers themselves are never printed at all. Then there is the advantage and pleasure of personal acquaintance with fellow students in the various subfields of our science. Briefly, the advantages are worth a lot of effort to gain, even when attending from so far away as California.

To the museum worker and systematic student finely made bird-skins furnish never-ending enjoyment. In the average series of a given species in a large collection there is plenty of opportunity for contrasts in "make", reflecting the extremes of care and innate technical ability exercised by the various original collectors. In a series that we happen just now to have been studying, the skins of superlative beauty as regards symmetry and all the other niceties of make happen to be those taken by Ned Hollister, William Palmer and Charles W. Richmond, some of them so long ago as 1889. No matter where the results of the field-collector's work may eventually find themselves, if of high grade they carry everlasting credit to the persons whose signatures are borne by their labels.

It is only through the laborious activities of indexers and bibliographers that the working ornithologist can gain access to, and keep track of, the huge literature in his field and can find his way to the published subject matter in the corner of the field in which he himself is trying to find out new things. A bibliography of a special field, carefully compiled and cross-referenced, which is bound to be of great and lasting use to both general and special students is comprised in the Second Edition, rewritten and augmented, of Dr. G. Carmichael Low's book now entitled "The Literature of the Charadriiformes from 1894-1928 with a Classification of the Order, and Lists of the Genera, Species and Subspecies" (H. F. and G. Witherby, 326 High Holborn, W. C. 1, London; 1931; xiv + 637 pp.; cloth 12/6 net). If a student concern himself with *s h o r e-b i r d s*—systematics, distribution, natural history—then he should avail himself of the immeasurable help afforded by Low's bibliography of the subject.

Dr. Tracy I. Storer sets forth the case against introducing non-native species with clearness and force in a recent article entitled "Known and Potential Results of Bird and Animal Introduction with Especial Reference to California" (Monthly Bull., Dept. Agric., State of Calif., XX, April, 1931, pp. 267-273). Some of his statements, with all of which we heartily concur, are in essence as follows: The results of acclimatization experiments in California with game birds to date have not been worth the cost. The same amount of money devoted to study and encouragement of our native species would have been productive of far greater returns to the citizens of the State. There is as much need for adequate control of animal immigration as of human immigration. A firm and unequivocal stand should be taken, at once, in the matter of importation of all kinds of alien animals. The importation of live animals for any purpose whatsoever should be put under rigid State supervision. Our native species of birds and our other native animals of desirable character should be given every possible encouragement; to do this, alien, competing species must be excluded.

Of superlative value to anyone interested in the protection and restoration of game birds is Aldo Leopold's new book,

"Report on a Game Survey of the North Central States" (American Game Association, Investment Bldg., 15th and K Sts. NW., Washington, D. C.; 1931; 299 pp., 21 maps, 15 charts, 58 tables, 4 photographic figures; price $1.00). This report is the result of the field and laboratory work of Mr. Leopold and several assistants, financially supported by the Sporting Arms and Ammunition Manufacturers since July 1, 1928. While the program undertaken centered in the northern Mississippi Valley, the principles developed apply to any part of North America. The subsistence factor is properly emphasized; and clearly is demonstrated the adverse effects upon game of grazing and of "slick and clean" farming. A great amount of once farmed or pastured land in the area dealt with has been abandoned of late years and is going back into public ownership. Mr. Leopold urges convincingly the kind of management that will restore to such lands their full value as sources of game and recreation, as well as of forest products.

As Mr. McAtee says in his review in this issue of *The Condor*, some sportsmen are forever looking for causes of game-bird depletion outside the most obvious one—their own insatiable appetite to kill. A late "discovery" of one of these ingenious sportsmen was that the continued decrease of our wintering waterfowl is due to the depredations of gulls and jaegers upon the eggs and young of those birds on their breeding grounds in the far north. Indeed, the proposal was seriously made that the Government supply the Eskimos of northwestern Alaska with guns, ammunition and local transportation so that they could kill off the gulls and jaegers and thus, presumably, save the season's crop of ducks and geese. Fortunately this "wild" proposition was through official channels submitted to good field naturalists for appraisement. We happen to have seen the replies of two of these naturalists, W. L. McAtee and O. J. Murie of the United States Biological Survey. These men point out that the greatest measure of destruction wrought on the breeding grounds of waterfowl comes as a result of disturbance by people. This we can attest to from our own field experience. The mere traversing of nesting grounds by one or more persons, which frightens the sitting or guarding parents from their eggs or small young, exposes these to attack by the predacious kinds of birds, which attacks may then be conducted in plain sight of the human interloper, who thus gets an exaggerated estimate of the damage done. Under undisturbed conditions various habits and devices on the part of the waterfowl, such as the covering of eggs with a blanket of down, are effective against the avian marauders. For, of course, the gulls and jaegers and the geese and ducks have been associated together during the summer season from time immemorial, including the period fifty years and more ago when waterfowl existed in vast myriads. It is the set of conditions increasingly unfavorable to waterfowl on their *wintering* grounds, including importantly the factor of excessive shooting, that is the key to the situation. Yes, as Murie well says, to turn a lot of natives loose on the nesting grounds of the birds would most certainly be a grand mistake—in the sportsman's own interests.—J.G.

PUBLICATIONS REVIEWED

BIRDS OF ARKANSAS, by W. J. BAERG. Univ. Arkansas. Coll. Agric., Agric. Exper. Sta., Bull. no. 258, Fayetteville, January, 1931, pp. 1-197, frontispiece and 37 figs. in text.

Baerg's Birds of Arkansas provides a useful handbook for teachers in that State who desire a source of miscellaneous information pertaining to birds. A few short chapters give a variety of general matter concerning birds. Much of this is based on original work done by the writer or under his direction. Although nearly everyone agrees with Mr. Baerg that "birds must be studied out of doors," it is hard to find justification for his pronouncement that "to shoot them rarely does any good, it destroys the object to be studied." In point of fact, nearly every page of this bulletin reveals a need for some well planned activity, with collector's equipment, in Arkansas.

For each of the 312 species listed there is a paragraph of description and one on range, both general and for the State. A study of all these species accounts prompts the following comments as being of possible use to writers of similar bulletins. The attempt to serve too many purposes in a short annotated list of birds seems sure to confuse the reader and to detract from the value for any one type of user. In the present case it would seem much

better to have given emphasis to the common species if the descriptions are intended for the beginner. How can the beginner be expected to pick out the species he finds from more than three hundred descriptions averaging less than five lines in length? On the other hand, if the work is intended for persons already familiar with birds, all these sketchy descriptions may as well be replaced with material of more interest and value.

Judged on a basis of its usefulness as a record of occurrence of birds in the area treated the bulletin shows some evidence of a too ready reliance on subspecific records furnished by other workers. There is little indication that doubtful races or species have been included because identifications have been verified. Some species are included, apparently, without reason. For example, the magpie is listed with the comment that it "may extend its range into this state in the near future." The fish crow has the usual paragraphs of description and range, with record for Arkansas, but with a footnote explaining that the latter is "apparently an error." Scarcely a single species has been given adequate treatment as to its manner of occurrence in the state. This need then remains to be filled by some future worker who is capable of compiling the records of past workers and who is willing to carry on a few seasons of field work.

An outline map of the state would have added much to the usefulness of this bulletin.—JEAN M. LINSDALE.

THE BIRDS OF OKLAHOMA, by MARGARET MORSE NICE. Publ. Univ. Okla., Biol. Survey, vol. 3, no. 1, Norman, April 15, 1931, pp. 1-224, 12 figs.

To present a history of Oklahoma birds from 1820 to the present time is the aim of this number in the Biological Survey Publications of the University of Oklahoma. This aim has been carried out so well that not only does all the material included contribute to this history, but every possible source of information seems to have been drawn upon by the writer. It is hard to think of a bulletin on Oklahoma birds that would be more useful to the person who may want to know the status of any bird species in that state.

First, there is a sketch of the bird life as the white man found it and as it has been modified because of the settlement of the State. The physical features of the State are sketched briefly. Much of the interest of bird study in the central states is due to the fact that in them the eastern and western floras meet, which circumstance affects so importantly the distribution of bird species. The breeding birds of the area are analyzed both as to geographic relations and numbers per unit of area. The wealth of winter birds is analyzed on the basis of Christmas censuses. There is a short section on migration in Oklahoma with mention of the rather surprising circumstance that large numbers of species are not to be seen during the migrations.

In the chapter on protection of birds it is pointed out that "birds do not belong merely to one class of people who take it upon themselves to kill everything that has aroused their prejudices. All citizens have an equal share in them, those who rejoice in the splendor of the living bird fully as much as those who wish to destroy."

A list of all persons who have done field work on birds in Oklahoma, with their itineraries, and a condensed statement of activity for each, shows the sources that have been drawn upon for the accounts of species.

Present and future students of birds in Oklahoma are fortunate that Mrs. Nice has been able to publish a revised edition, of the Birds of Oklahoma, which includes the results of all her work in that State. —JEAN M. LINSDALE.

MUNRO AND CLEMENS ON SPAWN-EATING BIRDS.—In a report* on investigations conducted at Departure Bay, British Columbia, 1928 to 1930 inclusive, the authors give notes on the occurrence and abundance, and in most cases on the food, of about twenty-five species of waterfowl. In regard to wild ducks each individual of which stood accused of destroying millions of herring eggs per day, it is shown that the maximum consumption by the largest duck probably is not as much as 20,000 eggs per day. If every duck on the Bay destroyed herring eggs at that rate, the total consumption of herring would represent a valuation (the authors compute, assuming one adult herring to survive from each 10,000 eggs) of from $600 to $1120. This is far less than the ducks

*Munro, J. A., and W. A. Clemens, Waterfowl in relation to the spawning of herring in British Columbia, Biol. Board Canada, 46 pp., 7 figs., 1931.

themselves would be worth upon a meat valuation alone. The writers' conclusion that "for the loss of herring there is a reasonable compensation in the production of ducks" is a most logical one. It is pointed out furthermore that the birds could be fairly easily frightened away from the area; an official authorized to shoot for the purpose is suggested.

So far as gulls are concerned, it appears that they feed mostly on herring spawn that is cast upon the beach, that being in quantity more than is consumed by all natural enemies together. The destruction of spawn by birds "does not appear to be abnormal or excessive and if there has been a reduction in numbers of herring, it is a relatively recent condition and attributable primarily to man's interference with natural conditions."

This is the inevitable conclusion in all such cases; man is the arch destroyer. With characteristic hypocrisy, however, he always seeks to place the blame on minor destructive agents. Even if the blame could properly be shifted and the extermination of natural enemies permitted and accomplished, that would not be the end of the story. If some temporary gain were thus achieved, man, in his greed, would soon bring about just as great depletion as before. In other words the condemned natural enemies called vermin or worse by one side, and held by the other to be beautiful and interesting representatives of animate nature, would be wasted without any permanent gain. Preservation of these species, however, would be of permanent value to all to whom the term conservation is more than a by-word. Conservationists must stand against greed-inspired assaults on wild life from the first, lest in the end it be too late.—W. L. McAtee.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

JUNE.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, June 25, 1931, at 8:00 p. m. in Room 2003, Life Sciences Building, University of California, Berkeley, with about thirty-five members and guests present. In the absence of the regular officers, Mr. C. B. Lastreto occupied the chair. Minutes of the Southern Division for May were read.

Proposals of new names for membership were: James Randal Davis, 1915 Marin Ave., Berkeley, proposed by Charles A. Pease; Dr. Lewis Walter Taylor, Poultry Division, University of California, Berkeley, by J. Grinnell; Walter Raymond Salt, Rosebud, Alberta, by T. T. McCabe. A letter from Governor Rolph's secretary was read announcing that the Governor had signed the bill making the California Quail the State Bird. Mr. Grinnell announced the repeal of the Amador County bounty law. He added that this desirable repeal had been brought about through the efforts of Mr. Henry Warrington of Jackson.

The first speaker of the evening was Mr. T. T. McCabe who told of the courting and nesting activities of the Brandt Cormorants at Point Reyes and at the mouth of Tomales Bay. These colonies were visited by Mr. McCabe several times during the spring months and their ways compared with those of European Cormorants as studied by Selous.

Mr. E. L. Sumner, Jr., described the studies he had made of the Pacific Horned Owls nesting on the Los Baños Duck Refuge, near Los Baños, Merced County, where he watched the birds on different occasions between February 23 and June 8. Mr. Sumner's observations covered habits of adults and young, calls, and kinds of food brought to the nest. At the time of his last visit one youngster still roosted with the adults, even though sixty-one days old and twenty-one days out of the nest.

Mr. McCabe then told of a visit made in May to several nesting colonies of Tricolored Blackbirds where sixty or seventy thousand birds were found in one rookery and 2150 nestlings were banded during a twenty-four hour stay. Other colonies were described also. A question asked Donald McLean regarding the food of these birds brought out the fact that just as fast as the rice is sown it is flooded to prevent the birds from taking the grains. A narrow strip of ground in front of the advancing water, covered with rice grains and with mole crickets striving to escape the flood, forms an ideal foraging site for the blackbirds.

Mr. Lastreto described the vast flocks of certain birds he had noted roosting in parks in Colombia and even greater numbers of swallows seen and heard as they took wing from similar roosts in Panama. The evening closed with a discussion of the notes of owls, participated in by Mr.

Mailliard, Mr. McCabe, Mr. McLean, and Mr. Sumner.

Adjourned.—HILDA W. GRINNELL, *Secretary.*

JULY.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held at 8:00 p. m. on Thursday evening, July 23, 1931, in Room 2003, Life Sciences Building, University of California, Berkeley, with about thirty-five members and guests present. Vice-president Linsdale presided. Minutes of the Northern Division for June were read and approved. Minutes of the Southern Division for June were read.

Proposals of new names for membership were: Mrs. H. E. Cook, Rossmont Drive, Redlands, California, Dr. Frank M. Erickson, Route 3, Box 65, Salem, Oregon, and Mrs. Helena Lindsay, Route 4, Box 30, Hayward, California, proposed through the Western Bird-banding Association by E. L. Sumner, Sr.; Mr. E. W. Ehmann, 37 Bellevue Avenue, Piedmont, California, and Samuel B. Locke, Intermountain Forest and Range Experiment Station, Ogden, Utah, by J. Grinnell.

Mr. Charles A. Bryant told of having seen an adult Black-throated Gray Warbler feeding a young one near Ross, Marin County, a locality from which this warbler has not been reported as nesting. Mr. Grinnell gave the substance of a letter which he had received from Dr. F. B. Sumner enclosing feathers picked up beside the fresh remains of a house cat in San Felipe Valley, San Diego County. The feathers proved to be those of an adult female Golden Eagle and the inference seemed clear that the cat had met death as the result of an attack by the bird. Dr. Evermann told of seeing an albinistic Brown Towhee in his garden, the basal third of the tail feathers being white. E. R. Hall spoke of visiting Pyramid Lake, Nevada, on July 5, in order to observe the degree of protection afforded the Pelicans there by the presence of a warden. He urged members of the Club to advocate a full-time warden for the Lake, as only by such a guardian could the Pelicans be adequately protected. Mr. Grinnell contrasted his experiences on two days spent recently out-of-doors. In Napa County on July 14 he found Turkey Vultures plentiful, as many as twelve of these birds being seen in the air at once. July 22 he spent in the Mount Diablo country, Corral Hollow and the Livermore Hills, seeing only two Turkey Vultures during the entire day. He suggested that the vultures in the last named localities may have been killed off by eating thallium-poisoned ground squirrels, whereas in Napa County no thallium has been used. Mrs. E. R. Hall stated that last week on the Redwood-Moraga highway she had seen six vultures at one point. Donald McLaughlin told of birds seen at Recreation Beach on Putah Creek. Among them were Black-headed Grosbeaks, Yellow Warblers and two extremely tame Thrashers. Mr. Linsdale reported seeing a Nuttall Sparrow carrying nesting material after the middle of July.

The evening's speaker was Dr. Charles E. Johnson, of Syracuse, New York, who told informatively of wild life conditions in New York State and of the Roosevelt Wild Life Station at the New York State College of Forestry, situated on the campus of Syracuse University. Among the topics discussed were the efforts being made to conserve the now greatly depleted Ruffed Grouse, the successful introduction of the Ring-necked Pheasant, the experimental status of the Hungarian Partridge, and the study of the natural game refuges comprised in the extensive marsh areas of the central portion of the state where treacherous bogs protect, among other species, Sora and Virginia rails, Little Green Herons, Florida Gallinules, Wood Ducks and Black Ducks.

Adjourned.—HILDA W. GRINNELL, *Secretary.*

SOUTHERN DIVISION

JUNE.—The regular meeting of the Cooper Ornithological Club, Southern Division, was held at the Los Angeles Museum, Exposition Park, Los Angeles, Tuesday evening, June 30, 1931. President J. R. Pemberton was in the chair and about twenty-five members and friends were present. The minutes of the May meeting of the Southern Division were read and approved.

Applications for membership were read as follows: Dr. Ralph A. Woods, 2468 West Pico, Los Angeles, proposed by W. J. Sheffler; Mrs. R. B. O'Neill, 102 East 13th St., Tucson, Arizona, proposed by Walter P. Taylor; Miss Vesta Holt, State Teachers College, Chico, California, and Miss Clita L. Walden, 761 East 12th St., Eugene, Oregon, both proposed by Blondel H. Carlton; Mrs. Allen R. Hood, 5965 Fishburn Ave., Maywood, California, and Mrs. Anne Maclay Leffingwell, 706 Cam-

pus Ave., Pullman, Washington, both proposed by W. Lee Chambers; and Carl A. Prahl, Box 57, Encinitas, California, proposed by J. R. Pemberton.

As there was no other business to come before the meeting and no stated program, the meeting was opened for discussion and observations. Walter I. Allen had just called on J. Eugene Law who is recuperating from a recent illness at the home of his mother, 941 South Citrus Ave., Los Angeles. Mr. Law sent his best wishes to the meeting by Mr. Allen. Roland C. Ross told of a Road-runner that nested in a bucket hanging in a fruit tree, near Fresno. George Willett spoke of birds observed recently in the San Jacinto Mountains, with special reference to the nesting of the Band-tailed Pigeon. J. R. Pemberton spoke of the presence of young Bald Eagles at Santa Catalina and San Clemente islands.

Mr. Pemberton said that a friend whom he considered a reliable observer had seen twelve Condors and about twenty-five Turkey Vultures about a carcass on one of the big ranches in southeastern Ventura County recently. Condors were formerly common in that part of the Santa Monica Mountains but have been rare there for many years now.

C. O. Reis told of his observation of the destruction of nestlings by a hail storm in the Mammoth Lakes region in June, and Roland C. Ross reported the same storm to have been heavy rain in the Huntington Lake region; they also compared the nesting status of various species of birds at these two points in the Sierra at the time of the storm.

C. O. Reis told of a nest of the Bell Sparrow near San Bernardino that held water during a hard rain storm so that the eggs were covered. Harold Michener told of a Black-headed Grosbeak, banded at their station in Pasadena and killed at Placerville, California; he also reported a scarcity of Linnets at their station this summer. J. S. Appleton told of a House Wren nesting in the chimney of an old lantern. John McB. Robertson spoke of the birds seen on a recent trip to Grand Canyon, Arizona. Walter I. Allen had seen a Yellow-headed Blackbird in Altadena. Roland C. Ross told of a Canyon Wren nesting in a house, and Mrs. Ross told of some observations of the Ouzel in the Big Santa Anita Canyon. A Green-backed Goldfinch was exhibited which had been purchased in a Los Angeles bird store under the name of "Mexican Siskin".

The meeting was adjourned so that everyone might get better acquainted with a pet spotted skunk exhibited by Mr. and Mrs. Ross.—JOHN MCB. ROBERTSON, *Secretary.*

JULY.—The regular meeting of the Cooper Ornithological Club, Southern Division, was held Tuesday evening, July 28, 1931, at the Los Angeles Museum, Exposition Park, Los Angeles. President J. R. Pemberton was in the chair and about thirty-five members and friends were present. The minutes of the June meeting of the Southern Division were read, one correction made, and the minutes approved as corrected. The minutes of the June meeting of the Northern Division were read.

Applications for membership were read as follows: Emile Le Callier, Chateau de la Villette, St. Pierre-les-Elbeuf, France; Mrs. Rex Rice, care of Rice & Co., Douglas, Arizona; and Dr. Leon Patrick, Smith-Grote Building, Orange, California—all proposed by W. Lee Chambers.

A letter was read from Charles M. Wheeler, of the University of California, in regard to preserving specimens and gathering data on the ticks to be found on birds and other wild life in California. Mr. Wheeler asks that such specimens and information be sent to him at the College of Agriculture, University of California, Berkeley.

There being no other business to come before the meeting, J. R. Pemberton presented some moving pictures taken by himself: First some pictures showing the nesting of the Raven on oil derricks in the San Joaquin Valley, and also showing Mr. A. C. Bent climbing to several of the nests. Then the scene shifted to the Channel Islands, giving general views of the islands as seen from the water, and including several of the local Cooper Club members who have enjoyed Mr. Pemberton's hospitality on trips to the various islands. Then some of the nesting colonies of sea birds were shown, including the Black Oyster-catcher and its nest, and colonies of Farallon and Brandt cormorants, Brown Pelican, and Western Gull. Western Gulls were shown in the act of eating the eggs and young of both species of cormorants.

The meeting was then adjourned to allow informal discussion.—JOHN MCB. ROBERTSON, *Secretary.*

For Sale, Exchange and Want Column.—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of 15 cents per line. For this department, address JOHN MCB. ROBERTSON, Buena Park, California.

WANTED—Barnes' Egg Catalogue.—ED. N. HARRISON, *Box 324, Encinitas, California.*

FOR SALE—Complete set of The Auk, volumes 1 to 42, inclusive, beautifully bound and all in fine condition.—CLARENCE BRETSCH, *690 Broadway, Gary, Indiana.*

FOR EXCHANGE OR SALE—Eggs in sets: A.O.U. nos. 62, 144, 171a, 174, 207, 222, 239, 246, 261, 270, 272.—HENRY W. DAVIS, *Seaside Hotel, Atlantic City, New Jersey.*

FOR SALE OR TRADE—Condor, vols. 28 and 29; Journal of Mammalogy, vols. 8, 9, 10, and 11, vol. 9, no. 1 missing; Forbush, Birds of Massachusetts, vol. 2; Grinnell, Distributional List of Birds of California; Grinnell, Observations Upon Bird-Life of Death Valley; Grinnell and Wythe, Directory of Bird-Life of San Francisco Bay Region; Willett, Birds of Pacific Slope of Southern California; Taylor and Shaw, Mammals and Birds of Mt. Rainier National Park; North American Fauna No. 49.—ROLAND CASE ROSS, *1820 Bushnell Ave., South Pasadena, California.*

FOR EXCHANGE—Nest and eggs of Guadalupe House Finch, collected 1930, will exchange for Bent's Life Histories, U. S. Nat. Mus. Bull. No. 107.—S. A. GLASSELL, *1533 Santa Monica Blvd., Beverly Hills, California.*

FOR SALE—The Condor: Vol. XVI, 1914, complete; vol. XVII, 1915, complete; vol. XXI, 1919, no. 3; vol. XXIII, 1921, no. 5; vol. XXX, 1928, no. 5; vol. XXXI, 1929, nos. 1, 3, 5 and 6; vol. XXXII, 1930, complete.—MARIE A. COMMONS, *Tanager Hill, Crystal Bay, Minnesota.*

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